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CONTENTS

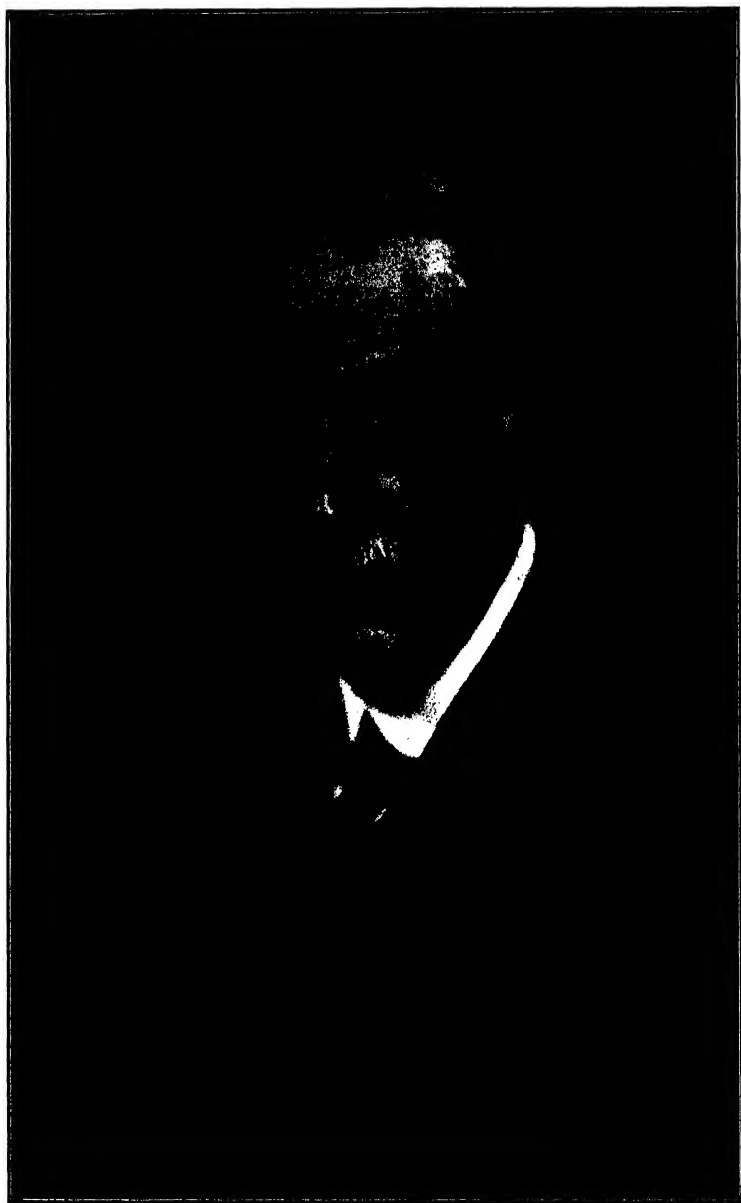
	<i>Page</i>
From the Chairman of Council	
<i>by</i> SIR CHRISTOPHER T. NEEDHAM	5
A Time for Expansion : The New Buildings and the Future	
<i>by</i> SIR ERNEST D. SIMON	10
Intelligence and Civilisation	
<i>by</i> PROFESSOR GODFREY H. THOMSON	18
The Past and Present Work of the Department of Engineering	
<i>by</i> PROFESSOR A. H. GIBSON	39
The Library and Its Uses.....	
<i>by</i> DR. MOSES TYSON	49
Some Teachers of Owens College	
<i>by</i> PROFESSOR EDWARD FIDDES	59
Convocation and Its Possibilities....	
<i>by</i> MR. DAVID CARDWELL	68

A SHEAF OF REPORTS

The Men's Union.....	<i>by</i> I. S. B.	71
The Women's Union	<i>by</i> J. H.	74
The Faculty of Technology Union	<i>by</i> H. I. F. P.	76
Athletics	<i>by</i> W. W. W.	79
The Athletic Union	<i>by</i> W. W. W.	80
The Women's Athletic Union	<i>by</i> W. S. C.	84
The Halls of Residence		90



(Stewart Bale)



(F. W. Schmidt)

SIR CHRISTOPHER T. NEEDHAM

FROM THE CHAIRMAN OF COUNCIL

(Sir Christopher T. Needham)

THIS Journal is a new venture of the University, one which it is hoped will be so welcome that its publication from time to time will become an event to which members of the University will look forward with pleasure. Its issue is designed by Council to meet what it feels to be a responsibility in regard to graduates, to provide news of University interest, information of developments in University policy as well as of personal matters concerning the different departments. There is abundant evidence that many graduates desire such news. The Vice-Chancellor recently attended dinners arranged by Convocation groups in London, Sheffield and Leeds ; at each of them references in his speeches to what has been and is being done in the University aroused immense interest. My own experience points in the same direction. Four months ago, both in Cape Town and in Johannesburg, I had the opportunity of meeting groups of men and women graduates who were delighted to be gathered together by the common bond of our University and who asked for information of the University's welfare and progress. If this attitude is representative of the majority of graduates, the success of this Journal is assured.

The Editor has done me the honour to ask me, as Chairman of Council, to introduce the Journal to our thousands of graduates. My life having been spent in Manchester, I can count myself exceptionally fortunate in having been able to keep closely in touch with the University ever since my student days, as associate of Owens College, member of Convocation, Hon. Treasurer, and member of the Court of Governors and Council. I am

profoundly grateful to the University, and I am proud to continue in its service. Looking back on my own experience as a student 50 years ago, membership of the Union, and of certain societies which were part of it, afforded opportunities of meeting students of other Faculties which I should not have got in any other way and which came to mean a great deal to me. The story of the development of the Men's Union reflects the changes on the social and athletic side of undergraduate life in the University. In my day, membership of the Union was voluntary and there were less than 200 members out of a total of 710 day students. Meetings were held in what is now the University office and was then also the meeting place of Council. On the days when Council met, the Union had to move out ! The first independent home it had was Dover House, on the other side of Oxford Road, now the office of the Joint Matriculation Board. When the Union moved there in 1893, members were greatly pleased with the increased accommodation. The Women's Union was at that time established in the house in Oxford Road, now the home (temporary, we hope) of the Faculty of Law. It was not very long before more room was needed for both men and women. By the joint efforts of past and present students, over £10,000 was raised for the Men's Union, and with the co-operation of Council the present buildings for both Unions and the refectory were erected and were opened for use in 1909, by the Chancellor of the University, Lord Morley of Blackburn. That was a great achievement and a notable improvement, but as the numbers of students increased and membership of the Unions became obligatory these buildings in their turn became outgrown. The recent (1936) increase in accommodation was much needed and was warmly welcomed. The number of students for the Session 1936-37 is over 2,600.

These personal reminiscences of mine may seem to emphasise the playing as against the working side of the

University, but they do so because the importance of the provision of ample facilities for social life in a mainly non-residential University is not always so obvious as that of laboratories, lecture-rooms and libraries. My fellow-graduates will, however, appreciate the value in the formative years of undergraduate life, of the opportunities for social contacts and relationships which are to be found in the free atmosphere of the Unions and upon the athletic grounds. They will be able to recall friendships formed at that time, which would not have been possible without a common meeting-place for talk and discussion, or for playing as well as working together.

Moreover, the working side of the University, the sterner stuff of which it is made, has a straightforward and incontrovertible case, but here too our University has a magnificent record. From the first, the governors of Owens College put the importance of securing the best teachers possible before the claims of bricks and mortar, and a tradition was established which succeeding generations of governors have fully maintained. We look back upon a line of distinguished scholars and teachers who have served the University, and we are happy to know that the high standard of the past is being upheld. But there comes a time when new buildings must be erected and old buildings reconstructed to meet the needs of natural growth. The University has entered again upon one of the periods of vigorous activity in relation to buildings and extensions which are a feature of its history. Sir Ernest Simon has written of the long-range plan prepared by Council for the development of the University site, provided the necessary financial support is received. Part of the plan has been carried out by the erection of the Arts Library, a beautiful building admirably suited to its purpose, extensions to the Unions and the Refectory, and the provision of a Staff House. In the opinion of Council and Senate, these were the most urgent needs, and they

have used up all our available funds, about £100,000, the accumulated savings of many years.

This, as I said, is only "part of the plan," and it will be seen that its realisation brings to the very forefront of our endeavour the problem of obtaining financial help with which to carry out the rest of our carefully considered scheme of development. The last public appeal was in 1919. Now we want a sum of £300,000, and annual subscriptions to give us £10,000 additional income to meet increased maintenance charges. It is perhaps not always realised that the average amount a student pays in fees is only about twenty-five per cent. of his cost to the University. Our graduates are to be found in all parts of the world filling posts with distinction in many spheres of life, in the professions, in the service of local, national and imperial government, in commerce and industry. This journal may reach many who have not been in touch with the University for years, possibly not since graduation. To all graduates I would put forward the suggestion that the University has a claim on their generosity, and where circumstances permit I hope this claim will be recognised in a practical manner. Help in different ways has already been received from graduates; besides donations and subscriptions over a period of seven years, the University has been offered the repayment of scholarship money and also the full payment of tuition costs. An interesting experiment is being tried by three graduates, one each of the years 1902, 1906 and 1922 respectively. Each is getting into touch with graduates of his year, telling them of the University's needs and asking for financial assistance; each is using the method of approach that seems to him best. The results of the experiment will be instructive and of great value. Whatever methods may be adopted later we hope in some way to form a band of "Friends of the University," who will in the future give us annual support towards the £10,000 needed.

The inauguration of this Journal at this moment is thus very opportune. During the last year, Council has undertaken the task of bringing up to date the register of graduates, a move that Convocation has been urging for some time, in order to be able to establish closer contact between the University and its graduates. Convocation has been working for some years past towards strengthening the ties between them by the formation of groups of graduates in different centres. There should be no dearth of fresh and exciting news to be recorded in this Journal, news which should enhance the pride in the University that almost every graduate feels, and it should penetrate even to those remote quarters where our graduates are maintaining the high tradition that Manchester has given them. The Council of the University wishes it all success and feels certain that it will be the means of forging new and stronger links of affection and generosity between the Alma Mater and her sons and daughters.

A TIME FOR EXPANSION

The New Buildings— and the Future

By Sir Ernest D. Simon

Treasurer of the University

MANCHESTER is the oldest of the modern provincial universities. Some of the buildings were erected sixty years ago ; nearly all of them are more than twenty-five years old. They were built to last hundreds of years and some of them are excellent. For instance, the Zoological laboratory is spacious, airy and well lit, and is probably the best in the country. But others of the buildings are out of date, and above all they are too small, for in 1910 the number of students was only 1,500 while today it is over 2,500. The Manchester buildings compare unfavourably with the handsome structures much more recently built at Nottingham, Bristol, Hull and Leeds. The outstanding case is perhaps Birmingham, which has a site within three miles of the centre of the city covering over 100 acres. Something over one-third of the University is now at work on that site. Another site of 150 acres adjoining the University is reserved for a hospital centre. On this, a magnificent hospital is nearly completed, and the University is building a completely new Medical Department, close to the hospital and within a few hundred yards of the central University buildings. The Arts Faculties are still in the centre of Birmingham ; it remains to move them to the new site. Birmingham will then have an ideal site for a modern university, on spacious grounds with ample open space, green fields and trees around, and the Medical School and hospital—

centre close to the University. On broad principles, no more perfect site and general arrangement can well be imagined.

Not only in Birmingham, but all over the world, people are putting up beautiful and dignified buildings on fine sites for their universities. The buildings in the United States are so grandiose—millionaires who believe in education are so numerous—that it is hard for any modern English university to hope to compete with them. South Africa, with a white population half that of South-East Lancashire, has several universities, including two with excellent buildings on magnificent sites. And much is being done by other English universities: in particular, the new university colleges, Hull, Nottingham and Exeter, are putting up fine buildings on beautiful sites, and crowded old universities like London and Leeds are making big efforts to improve things.

What about Manchester? We serve an area with a population of four million, while Birmingham serves only two million; we are an older university. We should all like to see our university at least correspondingly bigger and better. Well, in many ways we certainly cannot complain. I am very proud to be associated with the University of Manchester, which we most of us think stands pre-eminent among English provincial universities. The essential thing in a university is, of course, the staff, and in this matter we fear no comparison. In many ways it is probably a fine thing that our University is right in the middle of Manchester, in close touch with the life of the city and easy of access both to the people who live in the town and to those who come from the neighbouring cities.

What can we do to strengthen the University in its one weak place, a deficiency which has developed because we have not (in spite of the work of the last three years) done as much to improve our site and buildings as other

British universities? To this whole problem of making both the buildings and the site a credit to the area and giving them spaciousness and dignity, the Council and Senate have been giving careful consideration for some years.

The University Site

The first question to be considered was whether we were content with the present site, or whether it was still possible to move into more ample and beautiful surroundings.

The present site is smoky, noisy, and surrounded by a rather low class of property. But, as I have suggested, it has great advantages, because being situated within a mile of the centre of the city, it is easy for the University staff to make those contacts with the city which are so important for a civic university. Students are, unfortunately, forced to come to Manchester daily from places as distant as Preston and Blackburn: the journey is already long; it is only possible because the university is so close to the centre of the city. Then again, a large sum of money has been sunk in the existing site, and many of the buildings are of great value. Taking everything into consideration, the University authorities came to the unanimous decision that it was neither possible nor desirable to move the University to another site, but that every effort should be made to extend and improve the buildings and surroundings of the present site.

General Plan

In 1933 a general plan of development was agreed upon; the latest form of this plan is included in this article.

It will be seen that the site north of Coupland Street is reserved for engineering, physics, metallurgy and the dental hospital; the old hut which has been used as a

THE UNIVERSITY OF MAI DEVELOPMENT PLAN - OCTO

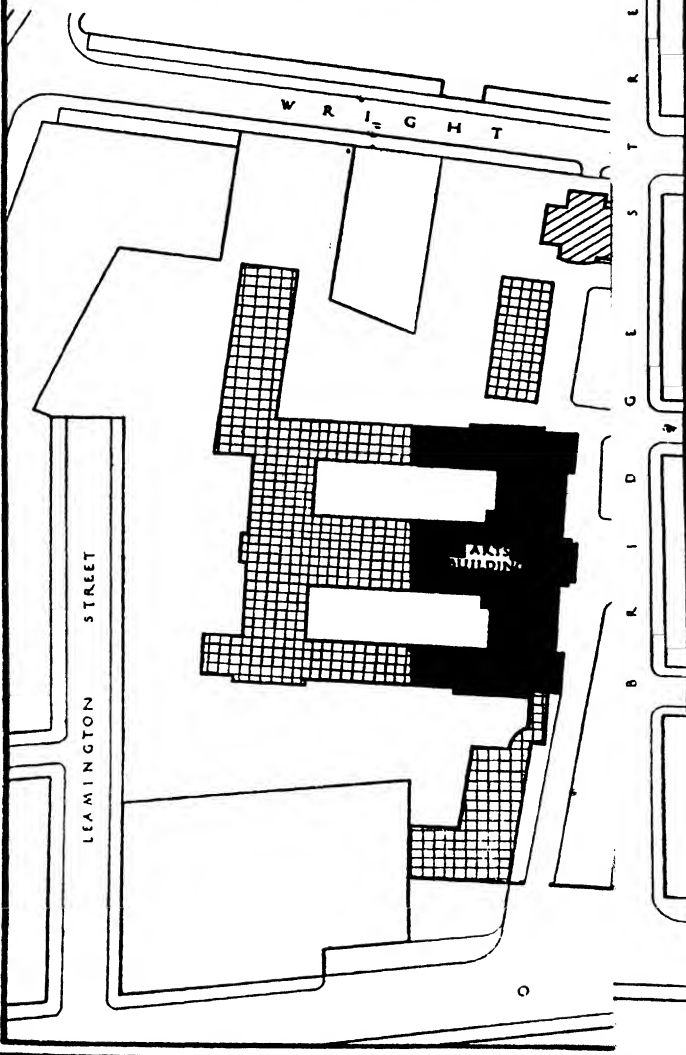
EXISTING BUILDINGS SHEWN
BUILDINGS RECENTLY COMPLETED
PROBABLE FUTURE EXTENSIONS

Thos. Worthington & Sons, Architects



SCALE OF FEET

THE AREAS A
THE SITE PROJ
BY THE DEPAR
DOTTED LINES!



chemical laboratory for medicals since the war, is to go at an early date.

The main block between Coupland Street and Burlington Street includes the great medical buildings, the remainder of the sciences, zoology, geology, botany, economics, commerce and mathematics, the museum, the Christie library, and the administrative offices.

The area between Burlington Street and Lime Grove is devoted to social life—the two unions, the refectories, the gymnasium and the staff house.

At the west end of Lime Grove lies the new arts library ; on the south the main arts buildings, while in other buildings, concentrated mainly along the front of Oxford Road, are English, architecture, law, geography, and economics with its research section.

The developments to make the buildings suitable for present-day requirements can best be considered in three stages.

The First Stage of Development

The first stage was decided on in 1933, and has just been completed, at a cost of about £100,000. It consisted essentially in meeting the social needs of the students and staff, and included the provision of a new library for the arts faculty.

The library externally is a satisfying example of the dignity and warmth a simple modern building can achieve in brick. Of the beauty and convenience within, the best indication that can be had by any means short of a visit in person, is given by the photograph included in these pages. Plentiful light and space make the rooms a refreshment to all who enter. Conditions such as these, with the further advantage of conditioned air, make a place where the mind can work with the minimum of physical strain. The shelves hold 200,000 volumes, and can take a further 100,000, the number for which accom-

modation is likely to be required in the next twenty years.

Both the men's and the women's unions have been extended, and are now adequate for the greatly increased number of students. There is for the first time a joint common-room for men and women students, and the unions are now probably as good as those in any provincial university.

The refectory has been extended by the conversion of the old Welsh church into a cafeteria where cheap and wholesome meals are being served under pleasant conditions. The cafeteria has been in use only a few months and is remarkably popular. It is open morning and afternoon to students and members of the staff.

There are now three good-sized rooms available for refectory purposes—the "old" refectory, the cafeteria, and the lower floor of the gymnasium. In one of these rooms it is hoped to hold occasional lunches. A fixed lunch will be served at a reasonable price, and will be followed by a twenty minutes' speech on some subject of general interest to members of the university, either by one of the university staff or by some distinguished visitor.

Another important addition to the amenities of the University, is a room which has been presented and equipped by women graduates, in memory of the fifty-year jubilee of the admission of women students. This room will shortly be open to all members of the University—students, staff and graduates. Tea and coffee will be served there, and it is hoped that it will be a pleasant common-room in which all those connected with the University can meet in comfort and with friendly informality. It is generally recognised that informal social contacts between students and staff are one of the most important aspects of a university education. Our facilities for these have been almost non-existent in the past. They

will now, we believe, be better than those of any other similar university.

The Second Stage of Development

The second stage of development will consist of three buildings at the back of the University.

The new dental school and hospital will be erected in the north-west corner, just opposite the medical department and on Higher Chatham Street. The erection of this building has been made possible by the munificence of Mr. Samuel Turner, of Rochdale. The site is an admirable one, it is easy of access, and it is hoped that the new building will provide a dental school and hospital at least as good as any, for a total of 180 students.

On the old brewery site, a completely new laboratory building will be erected to house the distinguished school of physical chemical research which is being built up under Professor Polanyi.

The third new development is in connection with the provision of opportunities for athletics and physical education at headquarters. Hitherto, though good facilities have been provided at The Firs, there has been nothing except a small gymnasium on the central site. The generosity of Mr. Robert McDougall in presenting us with the old drill hall in Burlington Street, has given us a magnificent building for the purpose. The University Grants Committee has been good enough to give us a substantial grant towards its development, and the intention is to provide a swimming bath, headquarters for the O.T.C., and, it is hoped, some squash courts and fives courts later. When this building is fully developed it will provide in close proximity to the University better opportunities for physical exercise and training than are available in any other modern university.

In this connection, graduates will be interested to know that the athletic ground at The Firs is now fully developed ;

and that the University has acquired a further forty acres of beautifully situated land at Wythenshawe, with the intention that this shall be gradually utilised for further athletics. It is already in regular use for cross-country running, for Rugby and for Association Football.

It is hoped that this second stage of the extensions programme will be finished by about the end of 1938.

The Third Stage of Development

Several urgent needs will be left unsatisfied even then. In the first place, the Bacteriological and Pathological Departments at York Place are both beginning to suffer from lack of accommodation, and will probably have to be dealt with.

But the most interesting development from the point of view of University graduates is that which will have to take place round Lime Grove, mainly on the south side. We publish an architect's drawing showing how it is hoped Lime Grove will look when completed. The details of this plan are still quite unsettled ; but it has been agreed in principle that the library is to form the base of a quadrangle with new buildings on the north and south sides of Lime Grove. Later on, the corner of Lime Grove and Oxford Road will have to be dealt with. The whole area is reserved for the faculty of arts and for the social sciences. Architecture urgently requires a new building ; law, geography and economics research are scattered through unsatisfactory buildings along Oxford Road ; and it will be necessary to rehouse the English department. Somewhere in this area it may be possible to build a really good lecture theatre, which should also be available for concerts and for dramatic activities.

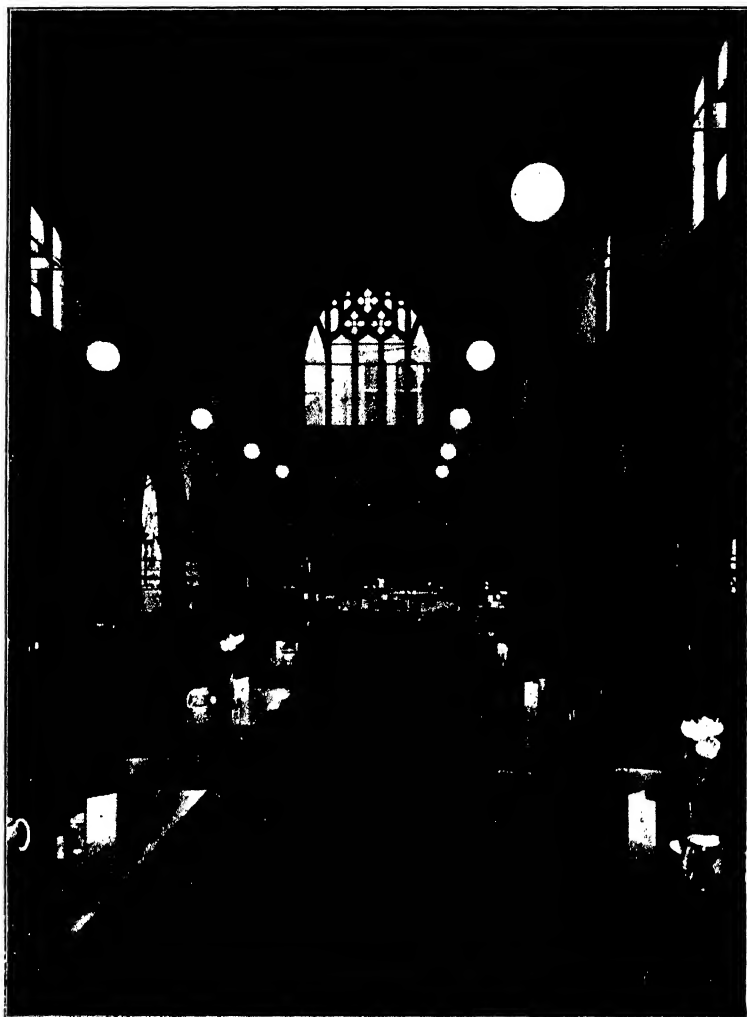
An Appeal

In 1941, the Congress of the Universities of the Empire is to hold its next quinquennial meeting in Manchester.



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ARTS BUILDING 1919 **FUTURE BLOCK** ARTS LIBRARY 1936 **FUTURE BLOCK** STAFF HOUSE & REFECTORIES 1937 & FUTURE BLOCK
THE UNIVERSITY OF MANCHESTER : VIEW SHOWING PROBABLE DEVELOPMENT OF LIME GROVE



(Stewart Bale)

CAFETERIA

This is the first time that the Congress has met outside Oxford, Cambridge, London, and Edinburgh, and we are naturally pleased that they should have selected our University for this new departure. If at all possible, it would be desirable to complete the main extensions before this meeting ; in particular, to finish the quadrangle in Lime Grove, in such a way as to show representatives from all over the Empire a set of buildings worthy, both in convenience and dignity, of the traditions and reputation of Manchester University.

Whether this will be possible depends on the result of the appeal which is now being made to provide the necessary funds. We are appealing to a population of four million people, living in South-East Lancashire and parts of Cheshire, Yorkshire and Derbyshire. Scotland, with the same population, supports no less than four separate universities. No other provincial university in England serves a population of more than two million, yet in recent years Manchester has actually received less financial support from firms and individuals in its home area, than some of the other provincial universities. May we hope that by their response to our present appeal, the people of greater Manchester will show that they intend *their* University to continue to be the leading provincial university, worthy of the great and famous area which it serves ?

INTELLIGENCE and CIVILISATION*

By Godfrey H. Thomson

Professor of Education in the University of Edinburgh

WHEN I was asked to name a subject for this lecture, my first thought was to use the occasion to tell my audience in entirely non-technical terms something of the work which has been done during the past three decades in the endeavour to measure intelligence, to define what it is, and to analyse it into its constituents if that be possible. Something of this I still intend to do, for one cannot well discuss Intelligence and Civilisation without asking oneself what each of them is. But as I thought further over the subject of my lecture I remembered the motives which had first led me to take an interest in the measurement of intelligence and which have continued to keep me at work on it. Those motives arose out of the observation that our educational system, through its secondary school scholarships, often favoured the well-taught or at least well-crammed mediocrity of one school at the expense of the clever boy of another school : for example, favoured the boy from a large and well-staffed suburban elementary school at the expense of a boy from a small and remote country school, where the only teacher had too much on his hands to have time for specialising in scholarship-winning, and where, since there was but one teacher, it was to a great extent a matter of chance whether the child enjoyed good teaching or suffered under bad. In a heterogeneous county like Northumberland, including suburban residential districts, large mining areas, and sparsely populated dales, it had been found that many schools in the latter two types of district simply made no

*A Ludwig Mond Lecture delivered at the University of Manchester on October 23rd, 1936.

attempt to enter children for secondary school scholarships, well knowing that they had no chance. We introduced intelligence tests in the hope of righting this injustice to the individual, and to an increasing extent by this and by other means it has been in some measure righted, and the intelligent children have more and more efficiently been selected and assisted to obtain secondary education. The motive was individual.

But as the years have gone on, the other side of the old problem of the individual and the community has also never been far from my mind, and I have asked myself, as I have also often enough been asked by others, whether we are doing the right thing both for the individual and the community when we thus take pains, through the medium of our educational system, to direct children of different degrees of intelligence into different types of school.

Tonight I want to discuss this. It is my faith that we must do individual justice. But it is our duty to do so without wrecking civilisation or hindering its progress, if we can choose between methods. For anyone who hopes, as I do, that furthering the education of intelligent children also furthers civilisation, it is necessary to ask about the dependence of civilisation on intelligence and about the relative importance, to civilisation, of intelligence and other qualities. We have seen in the years since the Great War a remarkable movement away from a belief in intelligence, in more than one European nation; a movement which can find nothing worse to say about a man than that he is a late-comer of the century of the Illumination;¹ a movement which preaches Irrationalism and decries the Reason; and those of us who feel opposed to that retrograde movement have a duty laid upon us to show how much civilisation has owed to intelligence.

¹ Krieck calls Herbart "der Spätling der Aufklärung," a remark which I confess appears to me an undeserved compliment to Herbart, but was not so intended.

Intelligence

I turn first, however, to the definition and measurement of intelligence, a province where also there have been controversies, though not such soul-shaking controversies as are likely to split the world to its foundations. It is one of the peculiarities of the idea of intelligence, and has often been made a reproach to those of us engaged in endeavouring to measure and analyse it, that it is difficult to define. Some of the difficulties are, I think, due to trying to define "intelligence," and diminish when we confine ourselves to defining "intelligent" behaviour or thought. The noun intelligence tends to invoke the idea of some entity called intelligence, whereas the adjective intelligent, more correctly, merely calls attention to an attribute of behaviour—for sooner or later thought finds issue in behaviour, especially if we include speaking and writing under behaviour—and although we cannot define intelligent behaviour briefly, we can enumerate some of its symptoms.

Before there can be intelligent behaviour there must be some purpose to be achieved (though it may be a very general and vague purpose and only become clearer as the events succeed one another), and the behaviour has to have the appearance of being directed towards that end in such a way as to achieve it as quickly, as economically, as cleanly as possible. By cleanly I mean that the behaviour, in solving the given problem, must not unnecessarily create others, though it will lead on, through this problem, to others beyond. By economically I mean not merely of time or of energy, but in the sense of solving simultaneously many similar problems and not leaving the work to be done afresh on each occasion.

We do not call behaviour intelligent if it has been learned by training—in the sense of rewarding certain overt actions and punishing others until the desired set of

actions comes to be exclusively performed—as by a performing seal, or an indoctrinated partisan. Here I come upon a distinction which is very important for me, for in a certain sense I think that almost all our behaviour is due to training by reward and punishment, and yet I do not think that almost all our behaviour is unintelligent—though it would not, alas, be altogether hopeless to defend that thesis in the world of today. The difference is that I do not call a piece of behaviour intelligent until some at least of the trial and error involved is done inside us, by means of images or words or some kind of proxy for the actual behaviour. When a chicken is shut up in a simple maze and supplied with a motive for escape (loneliness will do) it does ultimately escape, by the process of running hither and thither until it chances to escape. If it is repeatedly shut in the maze under the same circumstances as regards motivation, it will in time come to take the correct path, without any digressions into blind alleys. But its action is not then to be called intelligent. On the other hand, when the unpractised townsman is faced with the unfamiliar task of driving a flock of sheep along a road, we call his action intelligent if on seeing an opening in the hedge some little distance ahead he sends a boy to guard it until the sheep are past. It would have been unintelligent to let the sheep first go in and then drive them out. It is intelligent to see them first go in in the mind's eye, and take steps to prevent it. Actual behaviour has been short-circuited by internal thinking. On a higher level the problem confronting the man may be more and more difficult, but the principle is the same—imaginary or symbolic behaviour replaces actual, and to the extent that he is capable of this, the man is potentially intelligent.

An example from a more abstract province of thought may illuminate what I mean by internal trial and error. I may satisfy myself by actual individual trials in repeated instances that the sum of the series of consecutive odd

numbers beginning with unity is always a perfect square ; thus 1, 3, 5, 7 give 16, the square of 4. I shall probably do the earlier examples in my head, but the later ones on paper. Human curiosity will make me want to see this remarkable fact more as a whole, want to prove it, as we say. In endeavouring to do so I shall again carry out plenty of trial and error, both in my head and on paper, the latter mainly to complete trials suggested and begun mentally. The algebraist, from his training, will at an early stage be led to reverse the series and add it to itself, and thus see that every pair of terms gives the same result, whence he will soon arrive at a proof. The Greek mathematicians saw the same truth in a more direct fashion by thinking of each square number as a square of dots, each of which squares is made into the next larger by adding an L-shaped row of dots along the west and along the south side of the preceding square, which new set of dots will clearly be the next odd number. Thus the square 2×2 is enlarged to 3×3 by adding an L of 5 dots (2 on the west, 2 on the south, and one in the corner—it is the one in the corner which makes it odd) ; this 3×3 square is increased to 4×4 by adding an L of 7 dots, and so on. The modern accountant would probably see, in his special way, that the average of consecutive odd numbers is equal to the number of them.

This is of course very incomplete, but time forbids me to illustrate and to delimit further. I will only add that if to the power of making internal trials we add a trained habit of making many, and accepting or rejecting according to the imagined consequences, we have, I think, got the major parts of the definition of intelligence in action ; and I will add also that I think this power and habit mainly dependent, on its physiological side, on the actual number of elementary connections which the nervous system can make, and has practised making.

Whatever this intelligence is, there have been those

during the present century who have ventured to endeavour to "measure" it. When philosophically examined the measurement turns out to be no more than an ordering of magnitudes, even if it is that; but then still deeper philosophical examination might, and I think would, show that the same can be said of physical measurements.¹ The "unit" used has been either the amount by which an average child grows in intelligence in one year, or the statistical unit of the standard deviation of the intelligences of a number of children all of the same age. In the first case, it is a mere assumption that the mental growth from 5 to 6, say, is equal to the mental growth from 6 to 7. Indeed everything points to this not being so. In the second case there is similarly no guarantee that the standard deviation remains constant from year to year, in real mental units. In late years there have been some heroic attempts, notably that of Thurstone,² to arrive at an absolute zero and true mental unit of intelligence, attempts which depend in the main on the assumption that intelligence, if measured in real mental units, should be Gaussian in distribution; but they are not very convincing.

Yet in spite of the absence of a universally recognised definition of intelligence, and in spite of the very unsatisfactory foundations of its system of units, the measurement of intelligence has become more and more practicable and practised. Perhaps an analogy with the measurement of temperature will show how this can be. In the ordinary thermometer we have an instrument with a quite arbitrary zero, and which shows in actual fact the expansion of mercury in units marked on a glass tube. There is grave difficulty in believing that the change in our feelings of warmth is the same when the thermometer rises from 6° to 7° as when it rises from 66° to 67°. We have no

¹ See *The Essentials of Mental Measurement*, by Brown and Thomson, end of Chapter I.

² *Journal of Educational Psychology*, Oct. 1925 and Nov. 1929.

guarantee that the mental units bear any fixed ratio to the mercury units. And I defy anyone to define what temperature is, in the mental sense, any more easily than he can define intelligence. Yet we find thermometers in practice very useful.

Finally, before turning away from this very sketchy account of the measurement of intelligence, I may be permitted to note the pioneering work of Spearman in trying to base the whole study on the one hand on experimental researches followed by mathematical deductions, and on explicitly stated "noegenetic" principles on the other. As it is well known that I have opposed some of the views of Spearman, perhaps too I may be allowed to delimit the extent of my disagreement.¹ Spearman, having noted empirically a certain relationship between the correlation coefficients of scores in mental tests, based upon this a theory of Two Factors—to which later a number of auxiliary Group Factors were added—the principal factor being "g," usually identified with intelligence, though Spearman himself is careful to avoid naming it except by a letter. The analysis of human ability into these factors can be carried out by methods devised by Spearman and his school, or by other methods, mathematically but not philosophically different, devised by Kelley, Hotelling, Thurstone and others. My opposition is based on the fact that the analysis is not unique, but that innumerable alternative analyses are possible, all fulfilling the experimental conditions; and further, that among these alternatives is one which is intrinsically more probable than the others, an analysis not into large discrete factors but into innumerable bonds grouped in intermingled ramifications, the mind in my view being an integrated whole, though with aspects, not a bundle of factors. But it is impossible to do more than mention this

¹ See my paper "On Complete Families of Correlation Coefficients, etc.," *British Journal of Psychology*, July 1935.

controversy here. I must turn to the intelligence as we roughly estimate it by our actual examinations and tests, and to the way in which our educational system in England acts as a selective agency in furthering the higher education of the more intelligent.

The Educational Sieve

England has always had a scholarship system designed to assist clever poor boys to obtain a higher education culminating in a university degree. The system has been recently described, in its historical aspect, by Sir Michael Sadler in a scholarly and well-documented essay.¹ Since the Balfour Education Act of 1902 this system has been enormously broadened, in its lower reaches, by the institution of Free or Special Places in Secondary Schools for both boys and girls, awarded on an examination held usually within six months of the child's eleventh birthday. About 40 per cent. of the children in our English Secondary Schools thus pay no fee, or only a very small fee. (The others, called fee-payers, pay usually about £9 per annum, which is about one-third of the running costs.) The object of thus assisting clever children to a secondary education, leading perhaps to still higher education, is not often explicitly stated. The actual motive of many who share in furthering the movement, whether by their votes as constituents, their actions as Town or County Councillors, their contributions to the force of public opinion, or in any other way direct or indirect, is mainly, I think, a desire to give the individual poor boy a chance of getting on in the world. The equally laudable desire of keeping up the supply of educated persons needed by the community in its administrative services, in its professional classes, and in the ranks of technical workers, is in the background. It is a motive often stated by pious benefactors, but not,

¹ *Essays on Examinations*, Macmillan, 1936.

I think, very prominent in the minds of administrators or of those who take an active part in the public life of our cities and counties. They tend to view the matter as giving the individual his chance, not as assisting the community by providing it with trained intelligences. Indeed there are not wanting those who openly state that the community is getting more trained intelligences than it can deal with. These are undoubtedly taking a communal view, and presumably would wish to reduce the provision of higher education, at least of higher academic education, to conform with their notion of the community need. They might, however, desire on the other hand to increase the provision of technical schools and to facilitate the vocational education of clever boys who could be directed into engineering or textiles or shipbuilding or what not. The main motive of such views is the communal one. True, those who hold them might and probably would claim that John Doe and Richard Roe would be far happier as mechanics in overalls than as clerks in white collars or teachers in black gowns, but their main motive is communal.

The first problem on which we have stumbled is then the question whether every sufficiently intelligent child is entitled to a higher education, or whether the State has a right to set a limit, if it can only use a certain number of such educated intelligences. Three subsidiary questions bound up with the main problem are : (1) How many educated intelligences does the modern community need, and in particular how many university graduates can it absorb ? (2) To what extent does each sufficiently intelligent child at present actually have the opportunity to proceed to higher education, or to speak definitely, to attend a secondary school ? (3) What is the distribution of intelligence among mankind, and is intelligence an inborn or an acquired quality ?

Obviously we cannot debate at length all the questions

which arise, and the third of these I shall dismiss arbitrarily by giving the view of most psychologists that individuals, at birth, do differ considerably in potential intelligence, and that the actual differences of intelligence observable in adults are, to at least one-half of their extent and frequency and perhaps more than one-half, due to these inborn differences. The scatter of intelligence among children of 10 years of chronological age is such that about one-quarter of them are mentally 11 years of age and more, and ten per cent. of them are mentally 12 years of age and more. Something like three per cent. of them are 13 years and more old mentally, and a few of these three per cent. will even exceed 14, 15, 16 or 17 years of mental age, although their chronological age is only 10. In short, the scatter is very great, and is certainly in part innate.

Do those children who are sufficiently intelligent all have the opportunity of secondary education? The answer to this is certainly no, whatever boundary we assign to the intelligence necessary to profit by a secondary education. Fifteen years ago, in the course of some extensive experiments in Northumberland, I took occasion to remark that were the secondary school population to be suddenly annihilated it could at once be replaced, intelligence quotient for intelligence quotient, from the children who had remained in elementary schools or had gone to work in the mines or elsewhere. But it could not be replaced twice. In other words, in Northumberland in 1921 only about half the children with the requisite intelligence actually entered secondary schools. There has been a very considerable advance since that date in Northumberland. But in the main the statement is still approximately true for the country as a whole, and it has been in particular verified for London by a recent research by Gray and Moshinsky.¹ Something like one-half of even the most

¹ *The Sociological Review*, April 1935.

intelligent children—indeed more than half, if Gray and Moshinsky are right—are denied the opportunity of secondary school education. It must not be too hastily assumed that they are denied it by hard-hearted Local Education Authorities who do not supply a sufficiency of free secondary school places. There are certainly other reasons: for the category of children who do not enter secondary schools includes substantial numbers of the very highest ranks of intelligence, who undoubtedly could win free places if they tried, and many of whom indeed have won free places but have not accepted them. Denial of opportunity arises from other factors of our social system; from the desire of parents that the children should go to work at once; from the fact—an unfortunate fact I think—that a secondary schoolboy cannot usually be apprenticed to a trade, since that, in many trades, must be done before the age of sixteen; from the need for a boy to enter his father's shop or business as soon as possible; from the boy's own distaste for further bookish study and his natural desire to get to "a man's work"; and so on.

The situation in Scotland is different. Proportionately to population, more than twice as many children enter secondary schools in Scotland as in England. The wastage however is very great, and by 16 years of age the numerical difference has almost disappeared. The Scottish children who leave a secondary school early have obviously had the opportunity of a higher education, in the sense that a place in school was open to them. It should be added that after 16 years of age the Scottish superiority in numbers reappears, owing to the exit from English schools after the First School Certificate examination, not held in Scotland. There is only one examination in Scotland, taken on an average at 17½. Exactly twice as many Scots as English (proportionately to population) proceed to a university.

In England, then, only about one-half of those children who are intelligent enough to profit by it go to a secondary

school, but the factors which deny this opportunity to the others are at least as much sociological as educational. The best way in which our educational administrators could help to prevent this denial would be by offering more alternative courses in the secondary schools, and by endeavouring to arrange with trade that years in a secondary school (including years in academic courses) should count as part apprenticeship, or at least that apprenticeship should not be denied to a secondary school boy because he has passed the usual age.

But we have still to face the chief of our three subsidiary questions, viz., how many educated intelligences does a modern community need ? Now for my own part I reply to this without hesitation with the answer, as many as it can possibly get. It all depends on what is meant by the word "need." A modern nation can in a certain sense get along with fewer university graduates than England turns out today, and might be embarrassed by an over-supply, as is said to be the case in some countries, and even in our own country by some. But there seems to me to be a far greater danger in turning out too few than too many. Not only would those services which require university graduates be starved (among which services we in Scotland count the elementary branch of the teaching profession). There would also be the split in the nation between the educated and the uneducated, which means, if not civil war, then a state of disguised warfare. We are about to raise the school age to 15 in three years' time. It is my own opinion that, if we are to survive, we shall have to raise it a great deal further than that during the coming few decades, or at least raise, if not the compulsory school age, then at least the age up to which free education can be claimed if it is desired. It is not generally realised in this country that in most American States of the Union, in addition to the compulsory school age, there is such a permissive school age, usually 21, embodied either in the

State's constitution or in its laws. One of the results of the depression of four years ago was that the " children " of 18 and 19 years of age who had finished High School in America simply declined to leave, and the headmasters were embarrassed by large classes of ex-pupils ; the schools in fact began to grow unofficial Junior Colleges on top of their orthodox structure.

I have just said that I fear a split in the nation between the more educated and the less educated. This does seem to me to be a very real danger. It is the danger of Plato's " two nations " in another form. " Such a state is not one, but two states, the one of poor, the other of rich men ; and they are living in the same spot and always conspiring against one another " (*Republic*, 551 D, Jowett). Substitute " elementary scholars " for poor, and " secondary scholars " for rich men, and you have a dichotomy every whit as dangerous.

That is why I regret the forking of the ways in England, at the early age of 11 years, into elementary and secondary education, and why I prefer the American system of one High School for all. I know that a common reply to this is to point to the lower standards prevalent in American High School and College education, and to attribute these to the dilution of talent which occurs when the less intelligent are mixed with the more intelligent in one school. But while admitting the lower American standards I do not attribute them to this cause. For in Scotland, where I think no one can complain of lower standards, there is also a very considerable approach to the common secondary school. I have already said that more than twice as many enter, one reason being that entry is by qualification, not by competition. In theory at least, and in most parts of the country in practice as well, every child who passes the qualifying examination, at whatever age, is entitled to free secondary education ; and more than three-quarters of the child population do qualify. If only one-quarter enter

secondary schools, that is caused by other reasons, regrettable, but not so likely to engender bitterness : as the long distances which necessarily separate secondary schools in the sparsely populated Highlands and Islands, or family reasons, or the provision of " Advanced Divisions " which (at least in the cities) give as good an education as the secondary school though with a different bias—in some places, and this is in my eyes best, they are in the same block of buildings and under the same headmaster as the academic secondary school.

But although I think of the common High School as the ideal, I am practical-minded enough to know that England will not open her present secondary schools to make them common High Schools, and I look therefore to the generous development of the free Central or Senior Schools to perform this function. But this will only be if these schools are made more equal to secondary schools in the amount of money spent on their buildings, playing fields, equipment, and teachers, and if it becomes somehow possible, without chaining them to examinations, to reach a university through them, which will probably come through admission to faculties of commerce and of applied science, as the German *Realschule* got its first footing in the university, and as the product of the French *Ecole primaire supérieure* can get in by the doorway called " P.C.N."

In answering the subsidiary questions I have, I imagine, betrayed my opinion on the problem itself. I not only think that every sufficiently intelligent child is entitled to a higher education, but I think it would be in its own interest for the State to strain every nerve to see that he got it, and got it if possible in a way which would not create social differences based on intelligence, in the same school as his less intelligent comrade.

Intelligence and Truth

For the history of the advance of civilisation has been

the history of the conquest of the world by intelligence. The most astonishing example is of course the rapid advance during the sixth, fifth and fourth centuries B.C. in Greece, when not only the beginnings of our modern science were made, but the beginnings of our ideas of government, of economics, and of philosophy. Many factors no doubt contributed. The city-states of Greece were in sheltered valleys separated by mountains, or on islands. But these valleys were not so sheltered as to be immune from trouble and war. The Greek civilisation grew first and mainly in Ionia, where their new and vigorous race came up against earlier civilisations and learned from Persia and from Babylon ; or in Argos, where their first-comers found a Minoan civilisation. But history shows plainly enough that although there is something in this, yet it is not an infallible recipe for progress to bring vigorous primitive races up against an older civilisation. No, clearly the main cause must lie in the intelligence of the Greeks. Terman of California has estimated the intelligence quotients of great men of a more recent past. I wonder at what level he would place Thales of Miletus, Herakleitos of Ephesus, Pythagoras of Samos and Kroton, Socrates, Plato, Aristotle.

Nor are the troubles of civilisation today caused by over-much intelligence or over-much education, but by over-little. It is not because intelligence has made travel quicker, has made it possible for one man to speak to millions scattered over the whole globe, has made production easily catch up to and far surpass the geometrical increase of population which scared Malthus. It is not because we have too many scientists and too few poets. Poets are far more dangerous than scientists. I heard and admired and was much moved by Mr. Baldwin's Cambridge address to the Congress of Universities of the Empire : but on reflection I did not agree with it. Rather do I think with M. Julien Benda in *La Trahison des Clercs*

when he says : "*Ce qui étonnera surtout l'histoire dans ce mouvement des clercs, c'est avec quelle perfection ils l'ont exécuté. Ils ont exhorté les peuples à se sentir dans ce qui les fait le plus distincts, dans leurs poètes plutôt que dans leurs savants, la poésie étant infiniment plus nationale, plus séparante, comme ils l'ont bien su voir, que les produits de la pure intelligence.*"¹ Scientists have unwillingly and sometimes unwittingly supplied warring mankind with means of destruction, but they have not preached the doctrine. Civilisation has advanced just as much as it has worshipped truth, and has been rewarded by finding that beauty and the graces follow in its train ; and the worship of truth is the function of intelligence. You may expostulate that the science of the nineteenth century brought ugliness and destroyed beauty. But that, we may surely hope, was only a passing phase due to the velocity of change, and the very fact emphasises still more urgently the need of trained intelligences to understand this changing world and to guide it aright. Take for example finance, capitalism, money. Men of affairs have to grapple with their mysteries as well as they can, like the doctors of the Dark Ages fighting disease, heroically but blindly. What is wanted is knowledge, classified, generalised, tested ; and with understanding will come the cure. Intelligence has in the past made striking steps forward in this matter of finance ; the invention of metal money, of drafts on distant treasuries, of joint stock companies, limited liability, cheques, and so on. We ourselves have lived through a period of experimenting with money, with commodity dollars and registered marks and what not. Intelligence, which is experiment, but experiment done as much as possible inside the mind, will find the solution, and *only* intelligence : and unless it does so, the graces will have to beg their bread or earn it in misery and in sin. And it will only find the solution if it works for the sake of the truth

¹ Edition Grasset, p. 102.

only, not for any party or country or cause. Despite M. Charles Maurras, *L'avenir de l'Intelligence* is not to be the servitor of nationalism, and scientists and philosophers must not commit that *Trahison des Clercs* which M. Julien Benda so bitterly and brilliantly bewails.

In passing, I may note a contradiction between pragmatism, for which in many respects I have a regard, and this belief that intelligence must serve truth only ; for to the pragmatist truth does not exist waiting to be found, but is in the making. Pragmatism judges entirely by consequences, and would therefore judge intellectual work by its practical results, judging the eminence of a physicist by the application of his studies. Most men of science however chafe at the public demand for results, and believe that intelligence, in the persons of its most exclusive devotees, must serve no lower master than truth. Plato's philosopher came back into the Cave. In actual practice there are those who see the true Forms, and make no attempt to return to the Cave, and those middlemen who cannot themselves explore outside the Cave, but can go to the boundary Wall and learn at second-hand from the pioneers outside, returning then to apply their knowledge within the Cave itself. This in physical science. In ethics and morality, which Plato had most in mind, I doubt if anyone has ever been over the Wall.

Intelligence and Character

And this remark brings me to the objection perhaps most commonly and immediately voiced in opposition to the doctrine I am preaching, the objection that in world-progress character has counted for more than intelligence. But here I have another heresy to confess to. I think that intelligence and character are positively correlated. Although a keen and well-trained intellect does not necessarily mean a good character ; although there have been criminals

of genius, and many good men of only moderate intelligence ; yet the tendency is for a correlation of intellect with good character. It is in intellect that man differs most from the beasts of the field. It is in the use of intellect that civilised man differs from savage and barbarian. And just as bestiality and savagery are bad traits in character, so are the self-control and tolerance which, in the main, go with intellect, good points of character. If we think there has been progress in the evolutionary scale at all, then that progress has, up to the present, culminated in man : and man is essentially more *rational* than any other animal, as he is more praiseworthy in character. Men have bad characters. But it is also in man that the highest traits of good character are found, and they are associated, broadly and secularly, though not individually and definitely, with intellectual advance. Intellect is, in the main, necessary to character, or at least is its accompaniment. And although in my haste I called this belief a heresy, was I not mistaken in thus naming it ? Is it not " more universally admitted than any other fact about him " ¹ that Socrates held the doctrine that " badness is, in the last resort, a form of ignorance " and that the reason, not the feelings, must govern. The intelligence must of course be fed with a good education. I do not mean an education of the character, which invariably means indoctrination with some code or other, but a good intellectual education.² The Soul is to be *turned* from the world of becoming to that of being by a true art of education. " And whereas the other so-called virtues of the soul seem to be akin to bodily qualities, for even when they are not originally innate they can be implanted later by habit and exercise, the virtue of wisdom more than anything else contains a divine element which always remains, and by this conversion is rendered useful and profitable ; or, on the other

¹ Burnet *Thales to Plato*, p. 168.

² See the *Republic*, 518 E and 519 A, Jowett's translation.

hand, hurtful and useless." And the way to turn such misused intelligence from ethically bad to ethically good paths is to introduce it, through a suitable and graduated education, to things which the intellect recognises as worthy of its steel, to difficult and abstract things ; though what is difficult and abstract will of course depend upon the individual mind, and vary with it.

Luckily it is possible to refer those who demand experimental evidence to what is almost an objective proof of the positive correlation of character with either intelligence or education or both, in Bagley's book *Determinism in Education*.¹ This work was not written with that object ; it had a polemical aim, directed against the doctrine that intelligence is entirely a matter of heredity and is measurable with fatal exactness at an early age, after which the child's intellectual rank among mankind is fixed by an immutable doom, an extreme doctrine which Bagley had no difficulty in confuting, and which is probably held by no psychologist, though Bagley was no doubt justified in saying that the public misunderstood psychologists to say this. In the course of his enquiries, however, Bagley in effect proved my heretical assertion that intelligence and character go together. He first showed that intelligence and education go together, using as data the same array of facts as his opponents, namely the scores of nearly two million soldiers of the American army of 1917 and 1918 in an intelligence test, the " Army Alpha " Test. For the most intelligent soldiers came from those States in the Union, and in the case of immigrants from those foreign countries, which had in their boyhood the best educational systems. His opponents said that was because intelligent populations insist on good schools ; Bagley, that good schools make intelligent populations. For our purpose the difference is immaterial. For he next went on to show that those States with the best showing in the intelligence tests (and

¹ Baltimore, 1925.

also the best schools) were best in any of the ways in which one can objectively measure goodness of character in a community, for example had less crime of this or that sort. As I say, it is immaterial to me whether this is due to education or to intelligence, since Bagley shows that they go together ; the only point of importance is that intelligence, education, and law-abiding go together, all three.

Irrationalism Today

It is true that Plato anticipated a scanty supply of persons endowed with the highest intelligence and also with exceptional reliability and steadiness of character. That is only natural. We must recognise with him further that reliability is often found apart from the highest intelligence, and that the latter is tempted to be impatient and unsteady. Discrepancies there will be, and yet these are not incompatible with a general tendency. I cannot really think that, —in such a state as his, and with such a first education, music and gymnastic learned in play and without compulsion, amidst scenes and objects of good taste, and with literature purged of its baser elements—he could seriously anticipate the occurrence of men, intelligent enough to have become true guardians, among his third class, kept there by lack of character, men who would have been a serious source of trouble and revolution. Nor I think need we, if we are at equal pains to give an equally good education to all. The way in which revolution *will* come to his city is, he thinks, through a neglect of the laws of eugenics, which will cause a scarcity of the highly gifted : and the less gifted then necessarily coming to power will esteem education too lightly. The things really essential to the state are, a good first education to everyone, and a sufficient supply of the highly gifted, intellectually.

It seems then to be an extremely short-sighted policy of certain communities today to decry intelligence to such an

extent as they do, to expel from their posts of office in the community and even drive away from the country intelligent men, not only because they hold opposed political views (that is perhaps understandable though I think wrong) but because they are neutral, because they are not active partisans of the governing political party. This seems incredibly stupid whether it is done by American party machines after a new election, or by dictatorships in Europe, and will surely revenge itself. The only province in which it can be confidently asserted that competent men who understand the problems will agree with one another is in matters of the intellect, where though there are different hypotheses in conflict at the boundary of knowledge, there is an ever-growing settled country of full agreement, and an undisputed referee, agreement with facts and with the laws of thought. In all other matters men disagree, or are brought to an agreement only by training, propaganda, sentimental appeal, factors which separate masses of mankind as much as they weld together partisans.

The only hope for unity, permanent unity, among mankind is through the rule of intelligence, through the cultivation, by an education proper to each, of the intelligence of all. The schoolmaster is right who considers that his sole business is to lead his pupils to see truth clearly, and who holds that that is in itself character-training, and the only character-training the school may lend itself to, if it is to refrain from serving party or class, colour or race, or prejudice of whatever kind, but is to serve civilisation and all mankind.

THE PAST AND PRESENT WORK OF THE DEPARTMENT OF ENGINEERING

By Professor A. H. Gibson

THE Engineering School in the Faculty of Science of the Manchester University was established in 1868, when Osborne Reynolds, a wrangler and fellow of Queen's College, Cambridge, was appointed Professor of Civil and Mechanical Engineering.

A systematic course of lectures, extending over three years and embracing all the fundamentals of Civil and Mechanical Engineering, was organised, and practical instruction was given in surveying and in mechanical drawing.

The rooms occupied by the Engineering Department in the then buildings of the Owens College in Quay Street consisted of a lecture room, a drawing office, and a private room for the Professor. In 1873, the College moved to its present site in Oxford Road, and in the new buildings the accommodation was considerably increased and a small workshop was provided. This, however, could hardly rank as a laboratory, most of Reynolds' experimental research being, at this period, carried out at his private residence.

The need for a well-equipped laboratory was acutely felt, but it was not until 1886 that the funds for this became available, through the generosity of the trustees of Sir Joseph Whitworth. The laboratory—named the Whitworth Engineering Laboratory—was opened in 1887, and was one of the earliest institutions in the country in which systematic courses of laboratory instruction were given in conjunction with a three-year lecture course.

Owing to the growth of the engineering school, this laboratory gradually became inadequate, and a new engineering block with laboratories and lecture rooms was built in 1909. This still forms the home of the department of Civil and Mechanical Engineering in the Faculty of Science.

Under the guidance of Reynolds, the Manchester School quickly gained international recognition both for its educational and for its research work.

Reynolds combined in a remarkable degree the attributes of a mathematical physicist and of a practical engineer. His interests as a research worker covered a very wide field, and many of his investigations established fundamental principles of vital importance in engineering. In 1873, he contributed to the Institution of Naval Architects a paper on the racing of screw propellers, showing the effect to be due to cavitation, a phenomenon which became of the greatest importance with the later application of the steam turbine to ship propulsion. In 1876, he designed and constructed a two-stage reaction steam turbine, which ran at 12,000 revs. per minute and was probably the first practical machine of the kind. About this time he also invented and built a compound high-lift centrifugal pump, the prototype of all the various high-lift pumps which have received such extended application throughout the world during the last forty years. Later he took up the problem of the accurate measurement of power and devised new types of transmission and absorption dynamometers. One of these he used in his classical large-scale experiments on the determination of the mechanical equivalent of heat. Among other work carried out about this time, which has greatly influenced engineering practice, may be mentioned his researches on the laws governing the transmission of heat in steam boilers; his discovery of the very marked effect of small quantities of air in diminishing the efficiency of surface condensers;

and his investigations of the effect of steam jacketing on the efficiency of steam engines.

From 1883 to 1893 he published a large number of important papers. These included his theory of lubrication, which determined the fundamentals underlying successful lubrication and rendered possible the scientific development of the modern Michell or Kingsbury bearing. In recognition of this work, Mr. Kingsbury, of Pittsburgh, U.S.A., founded in 1919 an Osborne Reynolds Fellowship in the University for research in Engineering. A remarkable paper, "On the law of resistance in parallel channels," describes an experimental investigation of the circumstances which determine whether the flow of a fluid shall be smooth and regular with a resistance varying with the velocity (as in Poiseuilles experiments with capillary tubes), or turbulent, with a resistance varying more nearly as the square of the velocity (as in most cases of practical hydraulics). The conclusion, based on the dynamical principle of dimensions and confirmed by experiment, is that there is a certain critical velocity, depending on the ratio of the kinematic viscosity of the fluid to the diameter of the pipe, at which the transition takes place from one type of motion to the other. He laid down the vitally important principle that for true similarity of flow in pipes of different diameters or using different fluids, the product vd/ν , which is now by common usage termed the Reynolds number, must be the same in each.

In 1885, he turned his attention to the possibility of using small scale models of rivers and estuaries to reproduce natural conditions and to show the effect of any artificial modifications on the water levels and on the configuration of the bed. One or two river models had previously been constructed in France, but without any attempt to correlate the discharges, times and levels, and Reynolds for the first time used scientific principles in the design and operation of such models, introducing the time element

and the general idea of dynamical similarity. Not only were the models as constructed and operated geometrically similar to their originals, but the velocities of flow were made such as to give corresponding effects in both. In 1885, he constructed two small models to different scales of the upper estuary of the Mersey, in connection with an investigation of the possible effect of the then proposed Manchester Ship Canal on the régime of the estuary.

These experiments indicated that the main characteristics of the real estuary reproduced themselves in a remarkable degree in the models. The results appeared to be of such importance that the British Association decided to appoint a committee of engineers to co-operate with Reynolds in an investigation of the general question of the use of such models. The Committee commenced work in 1888, and reported in 1891 that "it would seem, therefore, that by carefully observing certain (stated) precautions this method of model investigation may now be applied with confidence to practical problems."

Shortly afterwards Reynolds became engrossed in the possibility of a mechanical theory of matter and ether which should, among other things, solve the riddle of gravitation. This absorbed the whole of his energies until his retirement. The results of this remarkable physical speculation are recorded in a long memoir on "The Sub-mechanics of the Universe," which marked the close of his scientific career.

Of the work of Reynolds' pupils only the briefest mention is possible here. Brightmore's work on the stability of dams; Dunkerley's investigations of the whirling of shafts; and Stanton's extended researches in the field of fluid flow, may be cited as typical of the wide field of investigation covered by past students of the department.

In 1905, Osborne Reynolds resigned. Stanley Dunkerley was appointed to the chair and resigned in 1908. He was

followed by J. E. Petavel—later Sir Joseph Petavel—who resigned in 1919 to become Superintendent of the National Physical Laboratory.

During these fourteen years, new engineering buildings were planned, built and equipped, and much reorganisation of courses took place. During the war years, the resources of the department were placed at the disposal of the Government. Many thousands of tests of materials were carried out for Government departments and many special instruments, notably for anti-submarine work, were designed and constructed. The first depth charges to be made were constructed in the department.

Before and after the war, extensive research was carried out in the department for the Home Office Committee on Humidity in Factories, and embraced the efficiency of steam pipe coverings, etc. This led to legislation regulating the standard of conductivity of such coverings, and the department at the request of the Home Office carried out the tests of these, and issued official certificates. At the same time, work was also being done on the failure of materials under combined stresses ; on the flow of steam through pipes ; the collapse of boiler flues ; the strength of struts ; the combustion of gases under high pressures ; and on various problems connected with the operation of gas producers.

Since 1919 the department has been actively engaged in many fields of research. The Reynolds tradition is still strong, and perhaps because of this a large section of this work has been devoted to problems of fluid flow and, more especially, of recent years, in the field of dynamical similarity.

In problems of hydraulic engineering, where the interaction between a body and a moving fluid is involved, the forces called into play are usually so complex as to defy any attempt at a solution, except by experiment. Such problems are found, for example, in the case of the

flow over weirs ; between bridge piers ; through sluices or over the erodible bed of a river in which further complications may be caused by the introduction of obstructions or training works.

Experiment on the full scale in such cases would often be prohibitively costly, and considerable attention has been paid of recent years to the possibility of experimenting on small scale models and of extending the results of tests on these to the full scale. In such models there is usually some scale effect, and many investigations have been carried out in the department to determine the magnitude of this effect. Once this is known, a correction can be applied to any results given by the model so as to give the corresponding effect in the large scale prototype.

An opportunity of continuing and extending the pioneer work of Reynolds on tidal estuary models offered itself in 1926, when the Severn Barrage Committee of the Department of Civil Research, wishing to predetermine the probable effect on the tidal levels and on the navigable channels of a tidal power barrage across the Severn estuary at the English Stones, some 5 miles above Avonmouth, decided to have an investigation on a scale tidal model of the estuary, and entrusted this to the engineering department of the University.

The changes in the bed of the estuary over a period of 78 years were known, and the first problem was to find the bed material which most nearly reproduced these changes when subject to the number of tides occurring in nature in this period. This involved a series of studies of the behaviour of bed materials of various sizes and densities, during which a large number of materials were investigated. Finally, a suitable material was obtained, and the effect on the estuary of a number of designs of tidal power barrage was investigated. The work on this particular model extended over four years.

The results appear to have stimulated interest in this

branch of research, and the department has since been able to carry out investigations of the same general type on scale tidal models of the estuaries of the Mersey, Dee and Humber to determine the probable effect of bridge piers or of training works, and on a model of the non-tidal portion of the Mersey to determine the effect of straightening certain tortuous sections of the river. As soon as time and space permits, investigations of other estuaries, each of which has its own special problems, are projected.

This work has shown that such models, if of a suitable scale, are capable of reproducing all tidal phenomena with a high degree of accuracy, and that they can give information as to the probable effect of any training works or artificial modification of a river or estuary, which could not be determined in any other way.

In the more general field of fluid flow much fundamental work has also been carried out on the general question of dynamical similarity in the flow in open channels, while recently the value of the critical velocity in open channels of regular cross-section and in a tortuous river channel has, for the first time, been determined. Other investigations of recent years deal with water hammer in hydraulic pipe lines; the flow in and the efficiency of hydraulic turbines and Pelton wheels; the effect of surface waves on the discharge of weirs; the effect of curvature on the resistance of river bends; the transportation of detritus in a flowing stream; streamline and turbulent flow in annular passages, in pipe bends, in open channels, and in convergent and divergent passages; and model investigations of siphon spillways and of weirs of irregular cross section.

On the mechanical engineering side, the main research work has been devoted to problems connected with the operation of one or other type of internal combustion engine, although some fundamental work has also been done on the heat dissipation from hot surfaces in an air

current. An investigation into the heat transference to the cylinder walls, piston and exhaust valves of internal combustion engines, which is still in progress, has lasted for some years, in the course of which engines of many types, ranging from slow speed semi-diesel engines to very high-speed air-cooled petrol engines, have been used. A technique has been developed rendering it possible to measure the temperatures of pistons and exhaust valves when the engine is running at normal speed, and the results are likely to be of great value to the engine designer.

Other work includes investigations of the effect of hydrogen as an auxiliary fuel in a semi-diesel oil engine ; the effect of reduced intake pressures on the performance of a diesel engine with special reference to operation at high altitudes ; the effect of high degrees of supercharge on a high-speed petrol engine, during which surprisingly high outputs have been obtained ; and the development of an optical indicator for giving a continuous record of the pressures in a high-speed petrol engine. At present, an investigation of the possibility of increasing the performance of a high-speed petrol engine by modifications in the design of the exhaust pipe is in progress and is promising to give useful results.

In addition to this, a number of researches have been carried out in the field of elasticity, including investigations of the elastic properties of thick cylinders and of thin hooped cylinders ; in the distribution of stress in a flanged pipe ; the vibrations of bridge girders and impact stresses in such girders ; the hysteresis of mild steel between the Elastic Limit and the Yield Point ; the abrasion of metal surfaces in dry contact ; and the torsion of irregular sections. A recent determination has been made of the torsional properties of the British Standard beam sections, while a recent experimental and theoretical investigation of the stresses in grain bins has offered an explanation of some hitherto unexplained failures in large

grain bins. Work has recently been carried out on an investigation of the stresses produced by surges in electrical transformers, and an investigation of the piezometric effect in quartz crystals with a view to measuring cavitation pressures caused by collapsing bubbles in regions of low pressure in pumps and turbines, has been initiated.

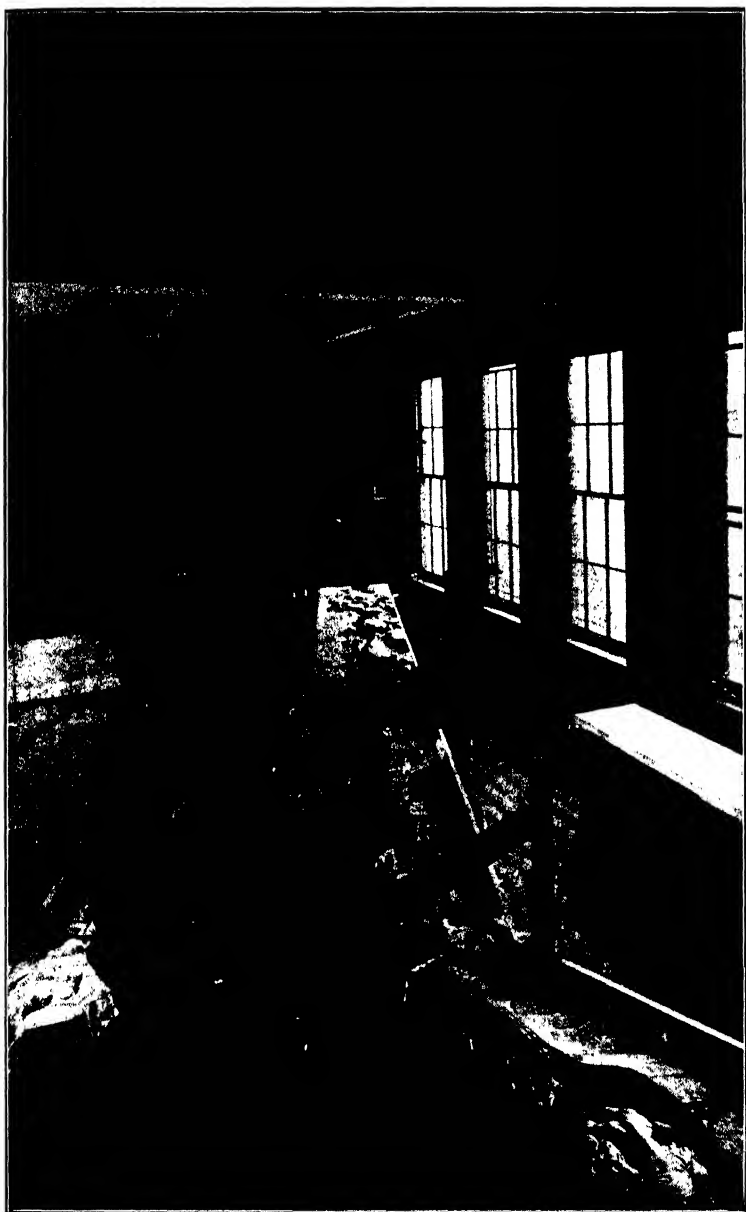
Original investigations conducted in the department of Electrotechnics, which forms the electrical engineering department of the University, have chiefly had reference to applied magnetism and alternating-current measurements, but of recent years research has developed along the lines of high-frequency work, and investigations in this direction are in active progress. Of earlier work done in the electrical laboratories, mention may be made of investigations in tooth ripples in alternators and on flicker in incandescent electric lamps on alternating current circuits. The fluxmeter type of instrument, now extensively used for measuring magnetic fields, was devised in these laboratories, and researches have been carried out on the properties of magnetic metals, both at ordinary temperatures and at the temperature of liquid air. Amongst other early work, numerous papers have been published dealing with magnetic testing; with harmonic analysis; and with the theory of electrical measuring instruments.

More recent work includes a research on mercury arc rectifiers and, in the field of high-frequency research, investigations on diode rectifiers; on measurements of current and voltage at radio frequency; on stability of radio-frequency amplifiers; on operation of frequency-changing valves; on methods of calibrating cathode-ray oscillographs; on simultaneous recording on cathode-ray oscillographs; on the design of wide-band amplifiers; and experiments on television.

As regards the educational work of the engineering

department, while modern developments and enlargements of the scope of the subjects with which the engineer has to deal have necessitated certain modifications of the courses in the direction of more specialisation in the more advanced work as between civil, mechanical and electrical engineers, every attempt has been made to maintain that sound fundamental training on which such stress was laid by Reynolds. Of recent years, the department has been the recipient of several generous bequests for scholarships, and the opportunity has been taken to found a comparatively large number of post-graduate research scholarships. As a result of this, during the last ten years some twenty per cent. of all the honours graduates have taken a post-graduate research course leading to the degree of M.Sc., and it is largely due to this that it has been possible for the department to accomplish as much as has been done in the way of research.

While the great majority of the past students of the department are engaged in the practice of their profession, a small minority have taken up academic work, and of these no fewer than fourteen are at the present time occupying University Chairs, ten of them being in the United Kingdom. Of recent years an increasing number have taken up research appointments with one or other of the large engineering corporations or in the National Physical Laboratory or one or other of the governmental institutions.

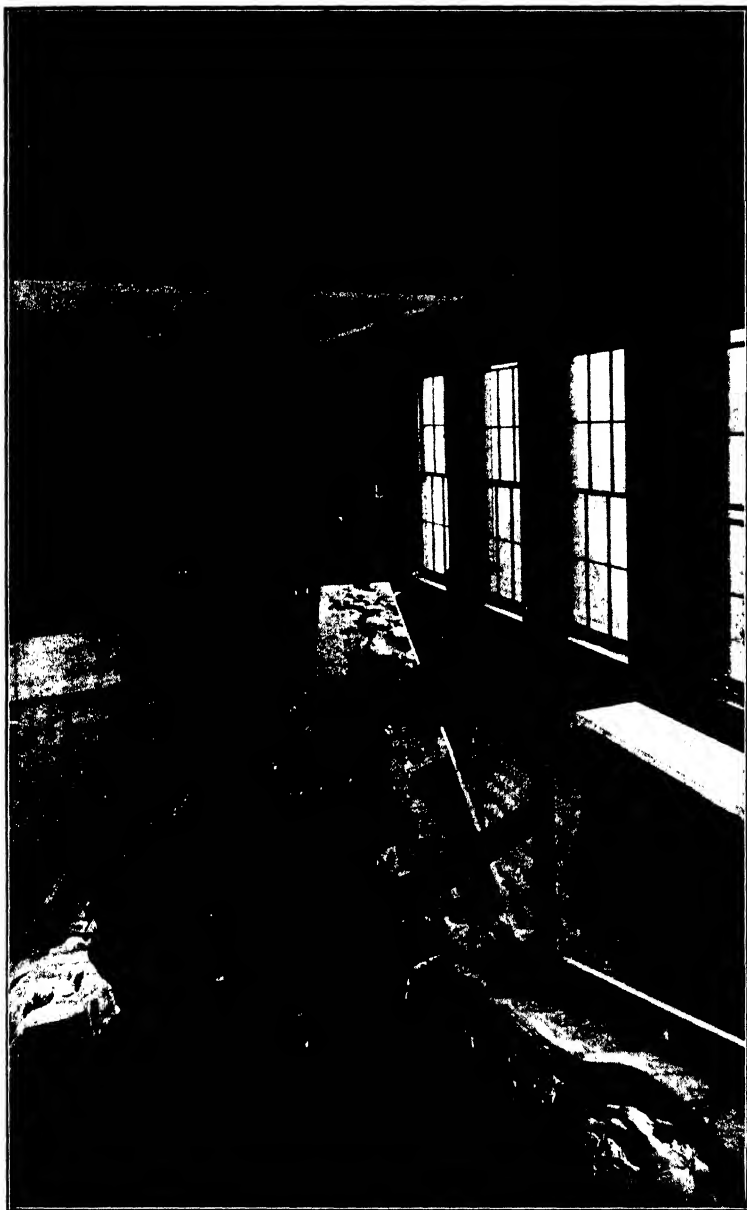


(Wartick Brookes)

SEVERN ESTUARY MODEL

department, while modern developments and enlargements of the scope of the subjects with which the engineer has to deal have necessitated certain modifications of the courses in the direction of more specialisation in the more advanced work as between civil, mechanical and electrical engineers, every attempt has been made to maintain that sound fundamental training on which such stress was laid by Reynolds. Of recent years, the department has been the recipient of several generous bequests for scholarships, and the opportunity has been taken to found a comparatively large number of post-graduate research scholarships. As a result of this, during the last ten years some twenty per cent. of all the honours graduates have taken a post-graduate research course leading to the degree of M.Sc., and it is largely due to this that it has been possible for the department to accomplish as much as has been done in the way of research.

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(Warwick Brookes)

SEVERN ESTUARY MODEL

vital part of the University. The library is a laboratory for the arts student ; for the scientist, a place of reference and, it is hoped, an occasional source of inspiration, while its unlimited interests make a contribution—as seminars, common rooms and unions in their own ways make theirs—towards bringing about that familiarity with the efforts and aims of workers in widely divergent fields of study which is after all one of the fundamental principles of University life.

The borrowing of books for home reading, the desirability of open access to the shelves, and, as a consequence of this, the devising of a system of classification most suited to such conditions of access : these are the major problems which determine the organisation of a university library.

The student, whether he be an undergraduate reading a more general course or a graduate engaged in research, needs to be able readily to consult relevant books, and few university libraries possess either the financial resources or the housing space necessary for extensive duplications. It follows then that the value of the library to the University is reflected not so much in the number of volumes taken out by readers as in the number, quality and accessibility of the volumes standing on its shelves. Thronged reading rooms are indications of utility more trustworthy than imposing figures of book issues—books to be consulted on the spot will benefit many, but volumes taken home by one student, and not immediately recoverable, often remain closed to others for a long and precious time. The reading rooms must be both capacious and comfortable, and the readers must be able to get at books relevant to their subjects with the greatest possible speed and ease.

The research reader is perhaps easiest to deal with. The essential for him is a comfortable reading space adjacent to the University's main stock of books and periodicals

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CHAPTERS IN THE HISTORY
OF OWENS COLLEGE
AND OF MANCHESTER
UNIVERSITY 1851-1914

by

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EXTRACT FROM THE AUTHOR'S INTRODUCTION

In writing this book I have had two objects. In Chapters I to IV I have attempted to supplement earlier accounts of the history of Owens College. Of that history there are two excellent accounts already in existence, one by Alderman Joseph Thompson, whose monumental chronicle brought the story down to 1886, and to whom all later writers on the subject must be deeply grateful; the other by Mr. Hartog (now Sir Philip Hartog) who, on the approach of the Jubilee of the Owens College, wrote a summary of its history down to 1900 and supplied complete lists of the staff and their publications from the beginning, and an account of the buildings and equipment as they existed when he wrote. To both these writers I wish to express my acknowledgments.

But, after nearly forty years, much new material has come to light, and by the lapse of time it is now easier to appreciate more fully the work of the college. I have therefore supplemented the earlier accounts from sources not previously used or accessible—in particular, from several volumes of cuttings from newspapers and other periodicals preserved in the University Library, from numerous published reminiscences, from oral traditions which still existed in the last decade of the nineteenth century but which will soon be forgotten and also from personal knowledge. To make an intelligible and continuous narrative it has been necessary to traverse to some extent the same ground as that covered by previous writers, but I have not attempted to write a complete history and I have only referred to the colleges of Liverpool and Leeds in their connection with the federal university.

The later part of the book deals mainly with the history of the University from the date of its reconstitution to the outbreak of war in 1914. In Chapter VI I have summarised its progress during these years and in the remaining two chapters I have discussed the new Faculties of Commerce and Administration, of Theology, of Technology and of Education, and given a general sketch of the financial history of the institution since its foundation.

CONTENTS

Introduction.

- Chapter I John Owens and the Foundation of the College.
II The Professors and Students of Quay Street.
III Reconstruction.
IV The Federal Experiment.
V The Owens College: The Last Phase—1880–1904.
VI The Reconstituted University (1903–1914).
VII The New Faculties.
VIII Ways and Means.

APPENDICES

- Appendix I Statement of Cash received and expended by the Trustees of Owens College on Income Account from September 8, 1851, to July 31, 1852.
II John Owens' Bequests to Individuals.
III W. R. Whatton's scheme for a University in 1829.
IV The Whitworth Benefactions.
V List of Charters, Acts of Parliament, and other Legal Instruments regulating the Constitution of Owens College and the University (1851–1914).
VI List of Bishop Berkeley Fellows.
VII Statistics of Students 1900–1901 to 1913–1914.
VIII Comparative Table of Income from 1851 to 1914.
IX List of principal Officers and members of the Teaching Staff (1900–1914).

Index.

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on the topic with which he is immediately concerned, and on topics most closely related to it. Moreover, the research reader has usually had training and experience in the use of libraries, in the selection of bibliographies, and in the expedient and economic way of abstracting the requisite matter from his sources. But the undergraduate reader has to be allured into the right attitude towards a library and disciplined in the right use of its books. In our newer universities there are many students who, when they first come to us, regard books as properties housed in public institutions ; they have not yet learned to see books as indispensable pieces of domestic furniture. These have to be encouraged to regard the library as their real home in the University (when they can spare time from their other home in the Union) ; to be made to realise that lectures are merely prolegomena, instructions and guides calculated to lead the student to the library door and to ensure the best use of his time inside it. He must, of course, be trained to secure from volumes the information most likely to serve his purpose : but he must be led to recognise that our purpose is to make the knowledge his own by exercising his independent judgment on the value of it. A well-equipped and comfortable library is a place where one adds to one's stock of knowledge by assimilating information through active and not passive reading, by reading not automatically, but critically. It is even a place in which one discovers the tonic refreshment of browsing.

The necessity of providing for both general students and research workers, and the desirability of adjusting sections of the library in accordance with the requirements of the particular courses of study prosecuted in the University at any particular time, result in peculiar problems of classification. It is apparent that no complete system of classification ever devised could entirely satisfy the requirements of all university libraries. The university

library should as far as possible be an open-access library, and it has, for instance, in our own, been found beneficial to group together for the time being at any rate such subjects as geography, anthropology and comparative religion, though in any of the recognised classification systems such subjects are widely separated. As the library is the servant of the readers, not a librarian's toy, prized plans, admirable in a library in which access to the book stacks is denied to readers, have occasionally to be seriously modified or even jettisoned, often with reluctance and occasionally with heart-burning.

Efforts have been made by those interested in our University to meet some of the difficulties which have been mentioned. The new library building is the first considerable step in a library scheme of which it is hoped in the not too distant future to see the completion.

The old Christie library building is no longer the home of the majority of our books ; it has been transformed into a science library. As far as possible all the books and periodicals which are usually required by both staff and students in the science departments have been gathered together into one large reading room where they may be consulted directly from the shelves by all those to whom the use of the library is permitted. Over half of the volumes dealing with scientific subjects are immediately available in this way. Overhead, in another large reading room, are collected those works less frequently used or extremely specialist in character ; and this part of the library also may be consulted directly by all members of staff and, on application, by certain special students. The science library has its own catalogue, giving cross references to such books as contain relevant scientific material but which are among the arts books in the new building.

The new arts library building was completed at the beginning of the present session, and all the arts and commerce books were transferred from the old Christie

building in Burlington Street by the end of the first week in October.

In the new building there are at present nearly 200,000 volumes. It has capacity for housing about 300,000 volumes, and at the present rate of growth on the Arts side should accommodate twenty years' additions. It is so planned as to be capable, by a three-fold extension in the future, of ultimately housing a million volumes. Before the plans were drafted, the University sent several of its members to visit appropriate university libraries in this country and one or two abroad. In the end it was decided to construct a building on the lines of the Radcliffe extension at Oxford (which was also designed by the architects to Manchester University).

When finally completed, the building will occupy a site which will make a desirable central University campus. The present unit provides accommodation for 220 undergraduate readers and 80 research workers. It has five storeys and is rectangular with projections at both ends; the two upper storeys providing reading rooms and some accommodation for special collections, the three lower storeys stack rooms.

This new arts library is so situated that it will form a corner stone of a range of buildings devoted to the prosecution of arts studies. They will group themselves round it in a way not unlike the layout of an Oxford or Cambridge College quadrangle.

All undergraduates have open access to all books in the two reading rooms; there is space in them for over 45,000 volumes. Each of these rooms is divided into fourteen bays, one or more bays being allocated to each of the chief arts subjects studied in the University. The books in the bays are being carefully selected from the general stock with the help of the professors and heads of departments, and should eventually satisfy most of the immediate needs of the general readers and of honours

students in their first and second years. Separate author catalogues are being prepared for bays devoted to principal subjects or groups of closely related subjects, and as the Dewey classification numbers are clearly marked on all catalogue cards, and numerous indicators are being prepared for both bays and shelves, little difficulty should be experienced by the student in finding any book which is on the shelves. Similar catalogues and indicators are also being prepared for the corresponding sections of books kept in the stack rooms.

The two reading room bays nearest to the general entrance are allocated to periodicals and new accessions. Provision is made for well over four hundred arts periodicals, each of which has its own sliding tray, on which the current part and any other unbound parts of the most recent volume are kept.

One other section of the library is open to all readers. The overhaul occasioned by the removal of the books to the new building revealed considerable gaps in our stock. Broadly speaking, as the purchases had hitherto largely been made on a departmental basis, the collection tended to be more or less specialist and two large sections of books had in general been overlooked, namely, those whose value is more general than departmental, and those directed to major interests of the contemporary world rather than to knowledge of the past. Whilst no proposal would ever be considered which might lead to our seeming to vie with our public libraries in their own proper sphere, and while it is generally agreed that no university library should handle obviously ephemeral publications, it has been realised that our students will profit greatly by finding on our shelves a collection of books of this kind, and moreover will be stimulated to realise that a university library is really something more than a museum. In this section, for instance, one may find recent biographies of outstanding persons—contemporary and past—and impor-

tant works on contemporary activities and developments of all kinds, political, social, economic, scientific, and even poetic. It is a gathering of those books which every cultured citizen wants to read to keep himself abreast of the world in which he lives.

The book stacks are open to all members of the teaching staff, to research students, and to third year honours students recommended by their professors. The two upper stack floors are equipped for 80 readers, each of whom is provided with a separate table, with adequate lighting facilities and in close proximity to the stacks containing the books relating to his special study. As has been already said, separate card catalogues of special sections are kept near these sections in the stack rooms.

Nearly ninety-eight per cent. of the books in the library are now accessible to all or to a large proportion of the readers. The remainder of the books consist of early printed books and rare works for the preservation of which special precautions are necessary. Access to no book is denied to a properly accredited reader.

It will be obvious that in a library in which the open access principle is so fully observed, certain risks have had to be taken. One of the problems to be faced is caused by readers who themselves replace books on the shelves and frequently in the wrong places. A second and much more alarming problem is the danger of books disappearing temporarily or permanently, through the actions of absent-minded or unscrupulous readers.

The first problem is partly dealt with by means of notices asking readers not to replace books but to leave them on the tables, and by frequent and regular visits on the part of junior members of the staff, one of whose duties it is to keep the reading room and research tables as clear as possible.

Precautions against the second danger are more difficult to take. All readers using the library first pass through the

entrance hall, off which is situated the card-catalogue room. The catalogue cabinets contain cards for all books in both new and old library buildings—and also for the books in many of the departmental libraries which at present are separately administered and do not form part of the University Library. It is possible for readers to consult the catalogue and ask for books from the attendants' counter without entering the library proper. To both reading rooms and stacks there is only one means of access—by a wicket gate immediately next to the counter. Little excuse is thus afforded for removing books from the library without presenting the official vouchers at the counter; if this is done under the new conditions, it will appear more like a deliberate breach of regulations than a mere oversight. One hears frequently of that peculiar elasticity of conscience which condones the temporary or permanent appropriation of books; but without excessive optimism we feel confident that the number of black sheep among our student readers is not unduly large. Certain risks have to be taken unless, on account of the misdeeds of the few, the majority of readers are to be deprived of valuable privileges. Such risks are, however, reduced as far as possible. Bags and cases are not allowed to be taken into the library proper, and a certain amount of supervision is kept at the barrier. Strict measures for dealing with such readers as are detected in breaking the regulations will also serve as a deterrent. In such matters the Librarian can always confidently rely upon the support of his committee.

In the course of years, all great libraries accumulate on their shelves a large number of volumes of little value—out-of-date text books, pamphlets and other works. On the open shelves such books often make it difficult for the readers to find those which really matter; frequently they serve to misguide less experienced readers; always they take up valuable space and in the mass are a heavy

drag upon the limited finances of the library. It is intended gradually to take considerable steps towards eliminating such books from our library. This raises problems of book rejection which are fraught with those difficulties from which such great libraries as the British Museum and the other copyright libraries are entirely immune.

In this process of rejection, the risks from occasional lapses of judgment are obvious, but they do not counter-balance the expense and inconvenience of retaining thousands of volumes for which, if they appeared on a book-stall, one would refuse to pay a few pence.

It is possible that a book never consulted for years may be demanded for immediate use and, in certain cases, may be urgently required by a reader who is unable to consult our copyright libraries. On such occasions the services of that valuable national institution, the National Central Library, are at our disposal. This library not only possesses a large and growing collection of books which can be loaned out on request to libraries all over the country, but also serves as the central office and clearing-house of a great inter-library loan system bringing in both British and continental libraries, in the working of which the Manchester University Library has for several years actively participated, both as a borrower and a lender.

Little space remains in which to discuss the growth of the University Library. It originated as the Owens College Library in 1851 as the result of a donation of 1,200 volumes from Mr. James Heywood. By the end of the century the numbers had grown to 60,000 and they were housed in the new building, presented to the college by Mr. R. C. Christie, which was completed and opened in the summer of 1898. Mr. Christie's own books still form bibliographically the most valuable section of the University Library, and it is the generous endowment made by him which has enabled the library to embark on the new collection of contemporary works of

general interest, mentioned earlier, which is to be known as the Christie Collection of Modern Works.

Dr. Prince Lee, the first Bishop of Manchester, bequeathed his library of 7,000 volumes to the University in 1870; the Whitworth legatees in 1892 enriched the University by the gift of the library of historical works formed by the late Professor Freeman; and many other benefactors, among whom special reference may be made to Mr. Charles James Darbishire, the Misses Gaskell, Professor Jevons, Mrs. Crace-Calvert, Mr. Samuel Robinson, Dr. Thomas Windsor, Mr. C. P. Scott, Mr. John Finlayson and Mrs. Adamson, have from time to time augmented the resources of the library by bequests and donations of money and books. Our most recent substantial donation occurred in the summer of last year when, through the kind medium of Dr. Henry Guppy of the John Rylands Library, we received a generous gift of over a thousand books from Mrs. Hartland, of Hardwick Court, Chepstow, including forty-one incunabula (in 57 volumes), many of them rare Bibles.

Today, the total of books in the University Library, which does not include those in the University Medical Library and the departmental libraries, is rapidly approaching 300,000.

Both the Library Committee and the Library Staff are determined to spare no effort to ensure that every possible advantage shall be secured from the collections in their charge; first in meeting the needs of the present students of the University; afterwards, in so far as is possible, in serving the intellectual and scientific interests of which Manchester is the centre; and, still farther afield, by co-operating with our sister university libraries.

We are confident of obtaining the support of our students and all friends of the University in these efforts.

SOME TEACHERS OF OWENS COLLEGE

By Professor Edward Fiddes

IN writing about the teachers of Owens College forty years ago or more I feel a difficulty in selection. There were then a little more than twenty professors and some fifty lecturers and other members of the staff, including many eminent scholars and scientists. To do justice to them all would require a stout volume. With the space at my disposal I can only speak of a few, and at the risk of being thought egotistical I will confine myself to some of those whom I knew best in my first few years in Manchester.

When I came to Owens College in the spring of 1890, I was woefully ignorant of its importance. For some months after finishing my degree course at Cambridge I had been making a precarious income by scraps of lecturing and coaching, and I was glad to hear of a vacancy in the Classical Department and still better pleased to be appointed. The only member of the staff with whom I had previous acquaintance was John Strachan, whom I had met at Cambridge, and the only books I had read written by Manchester professors were *Dickens*, by Ward, in the English Men of Letters Series, and the *The Unseen Universe*, by Balfour Stewart and Tait of Edinburgh—an attempt to prove Theism by the laws of Physics. It was a work of great popularity at a time when the evidences of religion was a subject of constant discussion.

I soon found that I had become associated with one of the most distinguished academic societies of the time. The College had now been in existence for nearly forty years, and of the first five professors appointed in 1851

there was only one survivor—W. C. Williamson—who held the Chair of Botany. He was a kindly and hospitable old gentleman but was no longer able to manage his unruly classes. Two years later he resigned and was succeeded by F. E. Weiss, half a century his junior.

Some of the great figures appointed in the 'sixties and 'seventies had gone. Sir Henry Roscoe, on his election to Parliament, had resigned his chair after a fruitful thirty years of office. Stanley Jevons, the economist and philosopher, and Balfour Stewart, the physicist, whom I have already mentioned, were dead. Richard Copley Christie, to whom we owe the Christie Library and, as Whitworth legate, the Whitworth Hall, a great lawyer and bibliophile, had resigned his chair a good many years before. James Bryce (afterwards Lord Bryce) had held the Chair of Law for a year or two, during which he prepared a scheme of reorganisation for the department. Thomas Barker had resigned the Chair of Mathematics and retired to devote himself to the cultivation of his garden, or at any rate to the study of Cryptogamic Botany and to the shrewd management of his investments, whence came the Chair of Cryptogamic Botany and other advantages to our University. Greenwood, the Principal, who with a quiet and patient wisdom had presided over the College for thirty difficult years, had resigned a few months before my appointment.

Of his successor in the Principalship, Adolphus Ward, I will say little here as I have written of him elsewhere. A great scholar and a great administrator, he was also, when one got to know him, a great friend. He was never bored or depressed. His hours seemed always filled by the claims of his work, of his family, and of friendship. He never tired of preaching the duty of preparedness for the opportunities which come certainly to all who work, and on his last visit to Manchester, when he spoke at a Founders' Day and Memorial Service during the war, he characteristically

took as his text for part of his address "Let your loins be girt and your lamps burning."

The Classical Department to which I was attached consisted at the time of just four members : two professors, the senior assistant lecturer—the genial Dr. E. B. England, afterwards Warden of Hulme Hall—and myself. Along with the lecturers in French and German we shared one room—formerly the Biological laboratory and now the Registrar's room. It will be seen that the entire strength of four departments—Greek, Latin, French and German—amounted to six, but even six in one private room would be considered overcrowding nowadays. Even as it was, we were better off than most of our colleagues in Arts, who had nothing but their share in the Professors' Common Room, which is now the Senate Committee Room.

Augustus Wilkins, the Professor of Latin, with whom most of my work lay, was a fine scholar. He had been President of the Cambridge Union and had taken high honours. He would normally have been elected to a fellowship but he was a Nonconformist, and to Nonconformists fellowships were legally closed by the Tests. When the Tests were at last repealed, he had married and was disqualified by marriage.

He was not the only victim of the Tests on our staff. Toller, the Professor of English Language, who came of Unitarian stock and had been a high wrangler, was kept out of a fellowship for some years but was finally elected. Antiquated and injurious though the Tests were, they had advantages. Their existence was one of the most cogent reasons for the foundation of Owens College, and some excellent teachers and students were there because they could not or would not go to the old universities as long as they were dominated by the Church of England.

Wilkins took a conspicuous part in administration. For many years he was Principal's Deputy under Greenwood.

He was a strong supporter of women's education when it was still suspect in many quarters, and of the establishment of a Faculty of Theology.

He kept a very youthful appearance till well on in years and it was a great shock to learn when he was just past sixty that he had had a severe heart attack. He lingered on for a year or two, giving such teaching as his strength allowed, till he died in 1905.

Another department with which I early became acquainted was History. Ward, who had given me a cordial welcome at my interview as a member of his own Cambridge college, invited me to dine at his house early in my first term. There I met the entire staff of the History Department: my host, who had retained a Chair of History after his election as Principal, Professor Tout, who was, like myself, a new-comer, and James Tait, who was then an assistant lecturer. The fourth guest was Osborne Reynolds, the kindly and eccentric Professor of Engineering. Some years later he published a theory of the structure of the Universe, under the title *Sub-mechanics of the Universe*, which, I believe, did not find acceptance. I understand that it is illustrated in Reynolds' portrait in the Whitworth Hall by the bowl filled with balls which he holds in his hands.

I look back on that evening with special pleasure, for I saw much of the three eminent historians whom I then met and with each of them it was the beginning of a life-long friendship, though in two cases it has been terminated by death.

Tout was a man of many-sided ability. To his gifts as an historian he added a practical aptitude in business. On the foundation of Ward's pioneer work he built up a great school of history, particularly medieval history, aided by a distinguished band of colleagues, including Tait, Unwin, Ramsay Muir, H. W. C. Davis, and F. M. Powicke. He took a prominent part in the controversies

which led to the establishment of an independent university in Manchester. Almost single-handed he founded and for seven years carried on the University Press. He pursued his aims with vigour. As was said of Brutus "Quodcunque vult, valde vult." And this ardour led at times to conflict in which he hit harder than he thought. But when the fight was over, Tout bore no malice.

He never spared time or trouble in helping his students and friends, and he had great social gifts. Aided by his wife, herself a graduate of the University, his home was a centre of hospitality where one would find Tout discussing prospects with young graduates or advising his students, sometimes in very plain terms—what he called "Shaking them over the Pit."

His talk was well-informed, and seasoned with shrewd and just comments, even on matters in which he had no special knowledge.

He was a good companion on a holiday—walking or cycling. He had a great interest in Church architecture. Once in the autumn of 1902 Tout and I went on a week-end cycling tour to look at some of the churches of Lincolnshire. Personally I was satisfied with seeing six or so in one day, but Tout went on to the full score, and on the Sunday morning he created a mild sensation in a country church where the congregation was assembling by walking in with his *Murray* and beginning an inspection of the architectural features.

He retired at the age of 70 but carried on work as long as health allowed. When he died, in 1929, one of his students wrote to me, "It's impossible that Tout should be dead. He belonged to the order of things."

I should have liked to say something about the remarkable group of scientists in Owens College at that time, which included Lamb, Schuster, Dixon, Milnes Marshall, and Boyd Dawkins, all in their prime.

But I must get on, and the rest of this article I will

devote to two arts professors—John Strachan and Robert Adamson. I have selected these not only because they were scholars of distinction but also because both died in middle life and therefore are less likely to be known to the present generation than those who survived till after the War.

John Strachan was one of a group of four great classical scholars born in the north-east of Scotland, who passed through the Universities first of Aberdeen and then of Cambridge. The other three were Robert Neil, an authority on Aristophanes and Sanskrit, James Adam, the Platonist, and Peter Giles, the philologist, Master of Emmanuel College, who died in 1935 at the age of 75. All the other three died under the age of 50.

Strachan was even in his undergraduate days at Cambridge a prodigy of linguistic learning. As the Cambridge rhyme put it :

He could chatter in Greek before he could speak
And in Hebrew before he was born.

He was appointed to the Greek Chair at Owens College when he was only twenty-three and held office for twenty-one years. He published an excellent edition of a book of Herodotus, but he will be best remembered by his brilliant work in Celtic—both Irish and Welsh. With Whitley Stokes, of Dublin, he published in 1901 and 1903 the *Thesaurus Palaeohibernicus*, a great collection of early Old Irish glosses. Later his work lay in medieval Welsh.

His premature death was a great loss to his friends and to scholarship. He was still in the early forties and already had founded a thriving school in Celtic in Manchester. There was every reason to believe that he might develop and strengthen it for another twenty years, and one regrets that sufficient endowment could not be found to allow so great a scholar to devote himself entirely to his chosen field. But it was not to be. In 1907, when working

on manuscripts in Wales, he caught a chill. It developed into pneumonia with fatal results.

On the day of my arrival in Manchester, after my interview, he took me out for the night to Marple, where he then lived. It was only the beginning of a long series of kindnesses. One was always welcome at his house with its genial hostess and family of eight children. He liked nothing better than a walk, whether for a Saturday afternoon or for a walking tour.

He was the scholar pure and simple and a philologist first of all. His preferences accordingly were for exact knowledge. He looked on Plato's philosophy as merely imaginative poetry and he disliked the University Extension Lectures which were then very popular as, he said, giving the conceit of knowledge without its reality.

Distinction naturally came to such a man, and it came unsought. In all his doings he was free from any taint of worldliness or self-seeking. He was happy with his books, his family and his friends.

Another professor whom I came to know well in those early days was Robert Adamson—also a Scotsman. By the premature death of his father, the family were left with straightened means and Adamson had to make his way by sheer grit and ability. His record as an Edinburgh student was brilliant, especially in Philosophy, and he was afterwards assistant editor of the *Encyclopaedia Britannica*. In 1876, when he was still only twenty-four, he was appointed to the Chair of Logic and Mental and Moral Philosophy, and, as if this was not enough, he was also appointed to the Chair of Economics. For economics in Owens College, strange as it may appear for a subject so popular in the nineteenth century, was never till 1898 assigned to a professor as his sole sphere of work. It was always linked up with something else. But it should be remembered that the conjunction of economics with mental and moral science was usual enough at that

time. Adamson's predecessor, Jevons, had taught both subjects and Adamson himself published some good work in economics.

Of his philosophy I am not competent to speak. He appears to have abandoned his early views and at the time of his death was working out a new interpretation of Reality. I remember his once saying that Plato would never be properly understood till there was a much more intensive study of his social and intellectual environment.

He was a good lecturer and expected his students to use their brains and not be the mere passive recipients of spoon-feeding. His honours' students, unfortunately few, had a deep reverence and affection for him.

With his keen and sympathetic intellect, he made an admirable administrator and on the establishment of the Federal University worked hard at its organisation. He acted temporarily as registrar and later he was secretary and then chairman of the General Board of Studies. He gave much help in the promotion of women's education (his wife was an early student at Newnham) and in the establishment of the Day Training Colleges. In debate he was a candid and courteous critic. He had no hesitation in raising the standard of solitary revolt, but he also knew when to be silent.

His reading was encyclopaedic. An authority on the English novel once said that Adamson seemed to have read more novels than anyone else he had ever met. His library was not the mere specialist's collection of books. It represented many departments of knowledge and was always at the command of his friends.

He was a good conversationalist, always willing to listen as well as to talk. He loved an argument and had a habit, disconcerting to the youthful theorist, of asking "Now, what does that presuppose?" The hospitality which he and his charming wife dispensed, especially on Sunday

evenings, is a pleasant memory to those who can look back to that time.

A little under middle height, Adamson was of sturdy and vigorous build. He was a tennis player and after leaving Manchester took to bicycling. He was an enthusiastic walker and climber and my first introduction to the Lakes was a walk with the Adamsons from Coniston to Wastdale over the shoulder of Old Man, Grey Friars, Cockley Beck and Mickledore, which was not bad for a beginning. Adamson carried the impedimenta of the three of us and was usually a mile or two ahead of his companions.

In 1893, to the great regret of his Manchester colleagues and students, he was appointed to a Chair in Aberdeen and two years later to a Chair in Glasgow, where he died in his fiftieth year.

CONVOCATION AND ITS POSSIBILITIES

By David Cardwell

Chairman of Convocation, 1936-37

“**J**OIN in the life of the University” is the advice that is showered on the Fresher by the Vice-Chancellor, the Union Presidents and Society Secretaries alike. And, generally speaking, this advice, which is as welcome as it is sound, meets with a satisfactory response during the three or four years which constitute the average university career. Unfortunately, however, there is seldom an opportunity of impressing the complementary advice on graduates. They are apt to forget that though they cease to attend lectures, they remain members of the University and that the advice which they received as Freshers still holds good.

To many it may seem that the end of their student days marks of necessity the end of their active participation in the affairs of the University. Only too frequently this is the case, but it is not of necessity so. For Convocation provides the means whereby graduates may not only continue to exercise their influence in the University, but may also meet socially in order to revive old friendships and establish new ones.

The field of activity open to Convocation is very wide. By the Charter of the University it is empowered “to discuss and pronounce an opinion on any matter whatsoever relating to the University . . .” It is, moreover, able to ensure the due consideration of its pronouncements by higher authority, for the Charter also confers power to elect representatives to the University Court.

The increased interest in the working of the University evinced by undergraduates in recent years is a healthy

sign ; but its continuance after graduation would be not merely healthy but of great potential value to the University. For there can be few bodies more competent to advise on the manner in which a modern University may best serve the community than an association of graduates who, equipped with the training which the University provides, have had to make their way in arts, science, commerce, industry or the professions. And it is through Convocation that graduate opinion can find expression.

The importance of the considered opinion of a representative body of graduates is not confined to University affairs, and Convocation recently took an interesting step to spread its influence. At the last annual general meeting, an opportunity was afforded for members to meet those who represent them in Parliament, and to discuss with them questions of general interest, in addition to matters directly affecting the University. The innovation was so successful that it is hoped to repeat it annually.

Since 1915, membership of Convocation has followed automatically on graduation. Graduates of previous years may become members on payment of a fee of 5s. Notices of Convocation activities are, however, only sent to those whose names are included in the postal list, and the name of any member is added to this list on receipt of a request addressed to the Clerk of Convocation at the University.

To graduates not resident within easy travelling distance of the University, it may seem that Convocation offers little attraction. This difficulty has, however, been met to some extent by the formation of Groups of Convocation which have already been instituted in Manchester, London, Leeds and Sheffield. The possibility of establishing a Group at Oxford is at present under consideration, and the University will gladly supply the names of members resident in other districts in which it is desired to form Groups.

The names and addresses of the Group Secretaries are as follows :

Manchester : Dr. A. Coulthard, 136 Barlow Moor Road, West Didsbury, Manchester.

London : Dr. and Mrs. F. C. Ormerod, 22 Upper Wimpole Street, London, W.1.

Leeds : Dr. L. P. Kendal, School of Medicine, The University, Leeds.

Sheffield : Dr. N. B. Lewis, The University, Western Bank, Sheffield 10.

Working in close association with Convocation, the Groups not only provide facilities for discussing matters of University interest, but also arrange such social and other activities as their members may desire. The Vice-Chancellor has taken a keen interest in the formation and progress of the Groups, and the visits which he and Mrs. Stopford have paid to some of the Group functions have been much appreciated.

Graduates owe to their University a life-long debt which few can repay in full ; but there are many ways in which some small return may be made, and among them service is by no means the least important. Convocation affords a means of service, for its value depends upon the extent to which it is a vigorous and representative body. By active membership, maintaining and strengthening the fellowship of the University, every graduate may contribute his mite.

A SHEAF OF REPORTS

THE MEN'S UNION

LET us start with a quotation. It is a well tried method of introducing one's self and one's subject. We might criticise such a conservative opening on the grounds of uninventiveness, or mark it down as lacking initiative, but since it is from William James and is highly relevant to this article, we will ignore all criticism, and proceed in the conviction of our original intention.

We will, let us emphasise, start with a quotation.

In his essay on "Philosophy and its Critics," James writes :

"At a technical school a man may grow into a first-rate instrument for doing a certain job, but he may miss all the graciousness of mind suggested by the term liberal culture. He may remain pinned down to his one narrow subject.... without imagination, atmosphere, or mental background."

Such a criticism as James levels at training schools in general may be at least partially true of us. The difference between the older universities and the technical schools is that the former attempt to broaden the intellectual and cultural life of the student ; the latter unfortunately have neither time nor facilities for such an education. It would probably be a just estimation to say that we come midway between these two extremes.

Yearly we must produce hundreds of teachers, doctors, dentists, lawyers, architects, and engineers ; the University and the Unions are crowded with men and women who will be admirable "instruments for doing a certain job," but those of broader interests, or a wider intellectual perspective are less numerous.

One of the main functions of the Union should be the bringing together of students. It should be of such a nature that students are encouraged to spend their time, and make their contacts, in it. It should act as the happy hunting-ground for inquiring youth, and as the arena for the conflict of ideas and ideals. It should be the magnet which attracts the odd and the strange, the orthodox and the conventional, and which throws them together in an unending search for harmony. It should be a battleground for minds, or a jungle of intellects.

To be more prosaic : the Union should introduce the engineer to the poet, the lawyer to the scientist, the athlete to the scholar, and the artist to the doctor. At the present time it is sectional, an incoherent collection of various dissociated interests, without unity

or common aim. It is the eating and meeting place of teacher-apprentices, doctor-apprentices, and business-apprentices.

It does not start to be a Union in the sense of an institution of active student life ; in the sense of a profitable world for exploration, rich in intellectual wealth, exciting in its culture, or fascinating in its personalities. There are, I think, three main reasons why the Union is thus defective. Two of these reasons are beyond our control, the third is being remedied at present.

First, the University is the response to a definite demand. It is the necessary training ground for the technical experts of an industrial district. The University rightly reflects the area it serves. The social community which gave it birth has rightly first claim to its attention. It is and must be the servant of this community, and its duty is to satisfy the demands for which it was created. Viewed from this angle we must remain a "technical school."

Secondly, in such a period of economic depression the first things to go by the board are those which men rightly or wrongly consider ornamental, cultural, mere accomplishments. For this reason a University such as ours which is centred in the heart of an unfortunate area, will have to ignore the aspects of life which are relatively unproductive of material gain—which is a complicated way of saying that there is no money in painting or poetry so we stick to medicine and television. So necessary is it for many students to keep their eyes continually fixed on their ultimate job that they have little opportunity of entering into the life of the Union.

The third reason I would suggest as partially responsible for the present imperfections in the Union is that the Union itself, its buildings, its situation, its aspect, its amenities, are not (or until lately were not) particularly attractive and did not induce students to make the best of what advantages it had to offer. Living in such a scattered fashion, some at hall, some in "digs," some at home, it is not easy to establish a feeling of unity or to form and maintain contacts except with those with whom one is working. The only way in which the diverse or foreign elements could be brought together is by attracting them into the Union.

This last consideration is the only one which should concern us. We cannot hope to establish a Lyceum in Manchester, nor can we dispel a trade depression, but we can and have been making the Union more attractive. The extensions which have been in progress for nearly two years have done much to improve the appearance of the place. A new silence-room has proved very popular, the opening of the joint common-room is anticipated with pleasure, the cafeteria is a great success. In addition, room is now provided for table-

tennis, improved billiard accommodation, and more varied literature in the reading-room. But as yet we have nothing comparable to the fiction library at Liverpool University.

It would be fairly easy but not helpful to comment on the other aspects in which we are behind other Unions. We should, however, note that we are still without a theatre. But it is more pleasant to discuss the progress we have already made rather than to criticise ourselves for what we have yet to accomplish. So being a guest in these pages let us pander to the popular taste.

The process of centralisation is fundamental to the welfare of the Union as it is to the University. As long as we had separate bodies and societies housed in buildings outside the Union, then there existed a feeling of disintegration. The additions to the main buildings have now brought such activities as the Stage Society out of the destitution of "No. 1 Lime Grove." The Rag, however, has been considered too unmanageable a child for the parental roof and is seeking a home elsewhere. But the Union is now able to shelter a greater variety of interests than formerly. The Athletic Union, the Serpent, the News Bulletin, the Society rooms, the card rooms, are now all gathered together, and the attractions of the Union as a whole are correspondingly various. In the social life of the Unions, dances are more and more popular. The Shrove and the Inter-Varsity are two old favourites, and the fortnightly Informals attract over three hundred regularly. Debates are not so successful. Interest in them is never great, while the standard of speaking is low. Still, it is to be hoped that even they will receive beneficial stimulation from this new process of centralisation.

In case you do think I have underestimated the activities or scope of the Union, let me conclude by listing the activities so competently catalogued in this year's "Handbook." If I rattle them off hurriedly in the fashion of the traditional news-editor, I may leave you with such a feeling of bustle, life, and excitement that the sense of imperfection is lost by the modern method of loud and continuous movement.

Well, here goes. We have the Athletic societies of rugby, cricket, soccer, hockey, lacrosse, athletics, cross-country, tennis, golf, gymnastics, boxing, fencing, shooting, badminton, swimming, and rowing; we have the religious societies of the Church of England, of Ambrose Barlow, and the S.C.M.; we have the political societies of the League of Nations, of Liberal, Labour, and Conservative; we have two national societies, Indian and Egyptian; we boast further of a mountaineering, a walking, an economic, a literary, a musical, and a stage society; and also of an O.T.C. and a Rover Scouts troop.

THE UNIONS

And in the face of such an array of interests and activities we feel forced to admit that we have been unduly pessimistic, and that the Union cannot be nearly so badly off as we have been pretending.

I. S. B.

THE WOMEN'S UNION

A VISITOR, seeking the source of the University's strength, would, or should, be directed not to the main entrance of the University but to the Women's Union in Lime Grove ; for who would deny, unless they be members of the Men's Union, that it is in Lime Grove that the fairest flowers of the University are to be found ? And such being the case, we who are responsible for the management of the Union do all we can to provide comfortable and pleasing surroundings for the expanding minds of our members. And so far we feel that we may claim a certain amount of success.

Our aim has never been to emulate the programme of the University. The Union is primarily a club and it seeks to provide and does in fact provide a convenient and desirable retreat for its members in their leisure hours.

Like all great things, the Women's Union began in a very humble way, and it is hard to believe that the stately red pile which now fronts Oxford Road and Lime Grove had its origin in a small common-room in the University. That was in 1900. Now we have three floors of rooms, and almost every year sees some new addition or improvement.

Most of the basement consists of cloakroom space. On the ground floor there is the Reading Room, which is used perhaps more than any other room in the Union : it is a most convenient " dropping-in " room. All Society and other notices are posted in it, and it contains newspapers and periodicals : it is the general rendezvous of members of the Union. On the same floor are the Housekeeper's Room, the Committee Room, unlovely, and in a decorative sense, the most neglected room in the building, and a small but very inviting Visitors' Room in which members of the Union may entertain their friends.

The largest room in the Union, the debating hall, is on the first floor, and it is used for all meetings and socials. Like most of the other rooms in the Union it has recently been re-decorated. Opposite is the drawing-room, the most restful room in the Union, carpeted and quiet and furnished in blue and cream. Here people come

who like to believe that sitting in an extremely spacious arm-chair with a book open in front of them is working. And to be sure it is an easy and pleasant way of deceiving oneself. Not the least attractive part of the room are its pictures : these are lent to us by the Rutherford Loan Committee and they are a most welcome addition to our amenities.

The second floor has been the scene of all the extensions which made our Union such an undesirable place to be in last year. Two of the rooms on this floor are owned by the Men's and Women's Unions jointly. The smaller of the two is, at the time of writing, being used as a Rag Office. The other is the new joint common room, which is only just ready for use. It is an attractive room and ought to be a valuable addition to the two Unions, for until now there has been no lounge in which members of both Unions might meet.

Before the end of the year we hope to increase the scope of the Union still further. We are very much in need of a silence-room, where people who want to work may do so in complete quiet. We shall be able to provide this need when the present quick-lunch bar comes into our possession. The room is quiet by position and ought to fit the purpose of a silence-room splendidly. We think too that we can see our way to providing a sports-room, since there is a fairly big demand for table-tennis in the Union. This can be done adequately only by transferring the Committee to the first floor, to the room which is at present used by members of the Staff, and by turning the present Committee Room which fronts noisy Oxford Road into a sports-room. Not until we have completed these arrangements can we feel that we have made adequate provision for the members of the Union.

The only room which remains to be mentioned is the dining-room, in the basement, which was fitted out for this purpose three years ago, when the demand for light lunches and teas in the Union became so great. The demand has naturally decreased since the new cafeteria has been opened and with it our catering profits.

The Union rooms are used almost every day for society meetings and socials. Apart from these the Unions run their own socials and functions in which they act jointly. The most important in each year are the Inter-Varsity debate and dance in early December, to which delegates from other Universities are invited, and the visitors' debate and the Shrove Ball in the Lent term. Not the least important event in the Lent term is the Shrove Tuesday Rag, in which women now take an active part, for by a ruling of two-years' standing they may now wear fancy dress. A great deal of work

goes to make the Rag the light-hearted and irresponsible thing it appears to be, and this year the Unions were hoping to bring the total so far collected by the Manchester students for the hospitals in the district to £100,000.

Besides these joint activities the Women's Union runs its own debates and socials and takes an active part in the work of the University Settlement, to which helpers from the Union are sent each week. It has also a loan-fund which was instituted to give financial assistance to students who might otherwise have difficulty in completing their course.

It was with great reluctance that we raised the annual subscription at the beginning of this year by half a guinea to £2 8s. 6d. This is a large subscription to ask from students, and cannot be maintained unless the facilities of the Union are really adequate. We hope that this will be the case by the end of the year. The raising of the subscription was a step which the Committee was loth to take, but the decreasing membership of the Union and its increased liabilities in the way of accommodation and upkeep made a bigger subscription essential.

J. H.

THE FACULTY OF TECHNOLOGY UNION

“IT is the aim of the Union to promote the general interests of the students, to represent them in matters affecting their interests and to promote co-operation amongst the students for social, technical and athletic purposes.”

Such is the official description of the Union, and it is the intention of this short article to elucidate the above description in the light of recent Union activities.

Taking these aims in order, we have first of all the general interests of the Students. Now this rather vague phrase is presumably directed at the general advantageous capabilities possessed by the university graduate over what might be described as the purely technical technicians—the latter has the technical knowledge and generally very little else. The former has, or should have, in addition to his purely technical knowledge, a wealth of general information on personal relationships, ability to estimate the reliabilities of opinions and the canny knack of howing how to get things done. All these additional personal qualities must be produced by the Students' Union, but the snag to this is summed up in an old proverb :—‘ You can lead a horse to water but you can't make him drink.’

With reference to personal relationships—a student should come into contact with many more varieties of personages than his purely technical counterpart can ever hope to do. As for his general information he has every opportunity to hear, question, argue and otherwise dabble in the opinions of various political and social sections as represented by the selection of Union lunch-hour addresses by eminent authorities. The ability to get things done in a businesslike way can be learnt by taking on some small job of work for the Union, e.g., society or club secretary or committee member.

The representation of Students in matters affecting their interests is carried out by the Student Staff Committee. During the past few years it has been of considerable assistance to both Staff and Students in facilitating their work. According to one of its more active founders, the Committee was set up to tell the Staff how to run the College. However, in spite of this extremely progressive view-point there is no doubt that the high reputation of the College and the reputation of its graduates is due in no small measure to the degree of co-operation which exists between the Students and the Staff.

In addition to this internal representation there are, of course, the much wider spheres of the National Union of Students which are quite outside the scope of this article.

Coming now to the social activities of the Union we find a considerable variety of events. First and foremost we think of the Tech. dances. They are three in number, the Carnival Dance, the Rag Dance and the Flannel Dance. In addition, there are numerous lunch-hour dances—the music being provided by the Musical Society, otherwise known as the 'Varsity Vamps. There is also the grand fellowship of the Common Room mostly held together at the moment by the Ping-Pong Players who are truly international in character. Parties by invitation of the Women's Common Room and S.C.M. rambles also occur. In addition, there is a very energetic Chess Club, or at any rate we presume it must be from its recent expansions. We must not forget the rather hectic Faculty Tours which give the members of the Union an excellent opportunity of seeing something of things abroad. The two principal attractions apart from the mere sight-seeing are the works visits and student life in other countries. Financial assistance is offered by the Union to its less affluent members. Under this section must also be mentioned the valuable work of the Ancoats Settlement, the particular connection there with the Union being the organising of regular dances by the 'Varsity Vamps. There have also been some belated attempts to produce a Union Magazine, *Technicollogy*,

but the "lingua Franca" of engineers does not seem suited to the tastes of most publishers.

The Rag is one of the Union activities in which Tech. has excelled for many years. Its usual possession of the Rag Shield (temporarily mislaid!) is proof of this.

For technical purposes the Union subsidises three large societies, the Engineering Society, the Chemical Society and the Textile Chemical Society. These societies arrange a series of lectures by outside technicians of repute, together with a number of works visits to firms not always in the Manchester area. These lectures and works visits are intended to broaden the outlook of the student on his subject rather than merely provide a supplement to the normal lecture routine. At least one of these societies can boast of film shows on its syllabus—and talkies too.

Under Athletic activities we have a variety of exertions:—

The Rugger Club.	The Hockey Club.
The Soccer Club.	The Boat Club.
The Swimming Club.	The Cross Country Club.
The Badminton Club.	The Athletic Club.
The Tennis Club.	

The culminating event of these clubs being the Athletic Union Dinner—an institution inaugurated some six years ago and of ever-increasing popularity. Many a worthy graduate from Tech. can proudly point to three battered pewter tankards on his mantel-piece.

Somewhere must also be mentioned the Rifle Club, the Table Tennis Club, the O.T.C., and the Motor Club, together with the hopeful revival of two political societies, the Socialist Society and the League of Nations Society.

But against all this there must be set off the plague of the "Brown Baggites Club," composed of those who arrive dutifully at 9-15 and depart punctually at 4-30. For them the Union can have no meaning—they will be our purely technical technicians—poor souls if they only knew.

As for the internal administration of the Union there is the Union Council consisting of a Union President, a Union Secretary, and representatives of all the more important departments. On the athletic side there is an entirely separate Athletic Union Committee composed of an A.U. President and A.U. Secretary and all the club secretaries. Financial matters are operated by a separate finance committee. The various societies have Presidents, Vice-Presidents, Secretaries and Committees. Other committees to whom we are indebted are the Rag Committee, the Socials Committee, and the Refectory Committee.

H.I.F.P.

ATHLETICS

OPPORTUNITIES for outdoor sports and physical recreation generally have been enormously increased for both men and women students by the University's recent acquisitions. Members of the Athletic Union and the Women's Athletic Union now have The Firs athletic ground at Fallowfield, a ground at Wythenshawe (at present, however, only partly available), a gymnasium, and a boat house on the Irwell, at Pendleton. It is hoped they will soon have the use of a swimming-bath.

The Firs ground comprises two Rugby football pitches, two association football, two men's hockey, two men's lacrosse, two women's hockey, one women's lacrosse, two net ball courts, a cricket square, and a number of hard and grass tennis-courts. In addition there is a cinder running track which will be used for the first time at this year's University Sports. This ground, well levelled and well turfed, with good spacing between the pitches, is among the best of its kind in the country. Its present condition is due to Mr. H. M. McKechnie, who has been honorary treasurer of the Athletic Union for the last twenty-four years, and to Mr. E. H. Evans, who after seventeen years' service as head groundsman, retired last August. At the end of the war the ground was in an appalling condition, having for several years been used by the War Office as a prison camp. What were derelict fields were converted into first-class playing pitches. At that time the ground was only half its present size, but since then extensions have been carried out and new pitches made. Situated on the ground is a well-equipped pavilion with dressing accommodation, large bath, showers, and dining room with kitchens. Large as this pavilion is, it is not always large enough to meet the demand for changing accommodation, and there is a small pavilion containing about four rooms which can be used on these occasions. The pavilions are now in charge of a steward, and the head groundsman is responsible only for actual ground work. Previously both offices were performed by the head groundsman.

The ground of which the University has acquired a lease at Wythenshawe is even more extensive than The Firs ground, having an area of about forty acres. There is at present one rugger and one soccer pitch. The changing and washing accommodation is as yet somewhat primitive, but it is hoped that soon a more permanent pavilion, as well as more pitches, will be made. The

two pitches at this ground are remarkable for their quality of being playable even in the wettest of weather. It would appear that this ground possesses fine natural drainage. Further development will be begun as soon as the Corporation has completed a road to the ground.

The University swimming bath will be in the old drill-hall in Burlington Street, which Mr. Robert McDougall has generously given to the University. It is understood that plans for a bath are well in hand. This building is so large that there will be ample room for the provision of many other amenities. In addition to the main hall, which has a large floor space, there are a number of rooms which offer scope for other kinds of indoor sports. For years the Athletic Union has been short of office and committee-room accommodation, and it has been suggested that application might be made at some time in the future for some such accommodation in the drill-hall building, and so establish what might be called an Athletic Union centre, with an office, a committee-room and a common-room, in which members of teams could meet and discuss games and tactics.

The boat-house is being purchased by the Athletic Union from Salford Corporation. A number of boats have been purchased, and those members whose interest is in rowing find every facility for the enjoyment of their sport.

The gymnasium, in Burlington Street, is used by the Boxing, Fencing, Gymnastic and Badminton Clubs.

W.W.W.

ATHLETIC UNION

THE Athletic Union, as a separate body of the University, first came into being in the year 1885, when, to quote from an old minute book, "at a meeting of the Cricket Club committee the decline of athletics in the College was deplored, and in order to bring about a better state of things, a scheme was brought forward by Dr. Milnes Marshall proposing to establish all the Athletic Clubs of the College on the same lines as the Union. This was discussed and passed unanimously." The Athletic Clubs referred to were the Football, Tennis, Lacrosse and Cricket Clubs.

The Athletic Union has considerably extended its activities since those early days, and now provides facilities for a great many forms of sport. There are fifteen clubs all in full activity: Rugby and

Association Football, Lacrosse, Hockey, Athletic, Cross-Country, Rifle, Badminton, Boat, Boxing, Fencing, Cricket, Tennis, Golf and Swimming.

The Rugby Football Club

Some of the clubs in the Athletic Union were in existence before the Athletic Union was formed. The Rugby Club is one of these, having been founded in 1882.

The Club supports five regular teams and occasionally six, and has over one hundred active members. The Universities Athletic Union Championship was last won in 1926, and the Christie Championship in 1934. The club's most recent success was the winning of the Manchester Seven-a-Side Competition last season, when teams from the best clubs in the district were defeated.

The club has produced a number of International players and many county players. At the present time one of its former members H. B. Toft, plays for England. He gained his first Cap last season, and has been chosen for all International matches this season.

The Association Football Club

This club was founded in 1892 and has always met with a fair measure of success. In the period since the war, two seasons stand out. In 1919-20 both the first and second teams went through the season without a defeat, and the Christie and Lancashire Amateur Cups were won. In 1935-36 the club won the Christie, the Universities Athletic Union, and the Lancashire Amateur Cups. It lost only two matches, and these were against professional sides. The Christie Cup has been held for the last four years. Since the war the club has produced two International players in J. F. Mitchell (1919-20) and L. Bradbury (1935-36). Three teams are turned out regularly.

The Lacrosse Club

The Lacrosse Club was founded about the year 1883, the prime movers being Norman and Brian Melland, and it has always held a good position in northern lacrosse. For a great many years it has been fortunate in having either as its President or as a Vice-President, Dr. C. H. Melland, who has worked hard for its welfare almost from the club's inception to the present day. The Universities Championship Cup has been held without a break since 1932, Oxford University having held it for the previous six years, and it can be claimed that the side is at present the best university team in the

country. In addition to playing a number of Inter-University games, the club plays in the Second Division of the N.E.L.A. League. It is hoped that the end of the season will see the club in the First Division. In the League the club is considerably handicapped by the alterations that occur in personnel at the end of each season, through men going down from the University. Most League sides are able to play the same team year after year.

The Hockey Club

The Hockey Club became affiliated to the Lancashire Hockey Association in 1905. Three teams are run, and the leading clubs in the district are met each season. The club has produced a great number of county players, and is always well represented on U.A.U. teams. For many years the club had as its President Dr. A. F. C. Davey, who rendered valuable service in many ways.

The Athletic Club

Before 1922 all Athletic Sports were run by the Athletic Union, but in that year the Athletic Club was formed and took over the running of the sports and the arranging of fixtures. In late years the standard of performance in athletics at this University has improved tremendously, particularly in field events, which are a relatively recent innovation. The club last won the Universities Athletic Union Championship in 1931, and in the last nine years has won the Christie Championship eight times. The club has provided many athletes for the British Universities' teams which went to Darmstadt, Turin and Budapest. Notable among these are Dr. H. W. Clegg, who captained the team at Turin, and C. B. Holmes (at Budapest), who has also had the honour of running for England at the Olympic Games of 1936.

The Cross Country Club

The Cross Country Club runs two teams, and competes against many of the universities and the leading local clubs.

In the last eight years the Christie Championship has been won five times.

The Boat Club

The University had an active Boat Club as early as 1870, but after a time it went out of existence. It was re-formed five years ago after hard work by three or four enthusiasts, and it can now be regarded as one of the foremost clubs in the north, and has met

with a fair measure of success at the various regattas. The club at present holds the Christie Championship.

The Boxing Club

The Boxing Club is full of keen members and is flourishing. Matches are held with other universities and sometimes against outside clubs. The club have won the Christie Championship several times in the last few years. In 1936, for the first time, a Manchester man won a U.A.U. title—P. Marx, fighting at featherweight.

The Cricket Club

The Cricket Club is another of the older University clubs ; it was well guided to its present status by the late Dr. H. H. Hitchon, who had been the President since the war.

The standard of cricket is up to that of the best clubs in the district, which may be attributed to the training which is given by some of the finest coaches in the county.

The club hopes to raise this standard still further on the new and excellent practice wickets which have been laid down at The Firs.

The Golfing Society

Home University golf matches are held on the Manchester Golf Course at Hopwood Park, and matches are played against other universities, and against most of the leading clubs in the district. The number and enthusiasm of members increase every year.

The Fencing Club

The Fencing Club members have fights against garrisons, other universities, and private clubs. They have won the Christie Championship fourteen times in the last sixteen years—an exceedingly good record. The membership of the club is about thirty. Fights are held with Foil, Epée, and Sabre.

The Rifle Club

A club of recent formation is the Rifle Club. Shooting matches are held against local clubs, barracks, and against other universities. In 1936, two men were on county sides, and two were in The King's Hundred at Bisley.

The Badminton Club

It is not long since the Badminton Club was formed, but it has won the Northern Universities' Championship and many of its matches with local clubs. The club has made an excellent name for itself in the district.

The Swimming Club

The Swimming Club can perhaps claim to be the most consistently successful club in the Athletic Union. From the time of its foundation in 1897 it has improved unceasingly. In twenty-eight Christie Championships, it has won twenty-four times. In 1933-34 it won the Christie and U.A.U. swimming and water polo championships.

The Tennis Club

Two teams are run by the Tennis Club, which is another successful club as compared with other universities. It won the U.A.U. Championship in 1933 and again in 1934. It has held the Sheffield Shield, which is offered for competition among the Northern Universities, on several occasions.

W. W. W.

WOMEN'S ATHLETIC UNION

PRiority of place among the activities of the Women's Athletic Union belongs to the Hockey Club, started by the women students of 1896, who with admirable courage and high-hearted enthusiasm met the many difficulties that confronted them.

Now, forty years on, what would those pioneers think of the subsequent developments resulting from their early efforts—of the variety of sport now available ; of The Firs and its spaciousness ; their successors—their freedom and their costume ; their organisation and their university and international contacts ?

There are now nine clubs affiliated, each with its own constitution, directing its affairs by an elected committee under control of the committee of the Athletic Union—itself subject to the Athletics Committee of the Council. While each club possesses a large degree of independence in regard to its fixture list and such things, there is general uniformity in matters affecting all the clubs, for example, the regulations regarding the award of colours, and the institution of half-colours, etc.

Allocation of funds are discussed in General Committee and the amount of special grants for coaching purposes or special needs approved.

Systematic winter practice of athletic sports has till recently been handicapped by shortage of space at The Firs, all the available ground being occupied by the winter games. To meet this need, students in residence have used Hall grounds for general training, and when possible, for specific technique practice: in three of them a long jump pit and run have been constructed.

The Warden of Ashburne Hall last year kindly allowed members of the Athletic Club use of the hockey pitch for training purposes. The newly completed cinder running-track at The Firs now provides excellent facilities for regular exercise throughout the session.

The close proximity of the drill-hall stables in Burlington Street encouraged an interest in riding, and through the zeal of some members of the Women's Committee advantageous terms were obtained for members of the Women's Union. Those who joined the Club derived great pleasure from the exercise and expert tuition, but the number remained small and the Club did not receive recognition from the Women's Athletic Union.

Another section of students approached the Women's Committee about the formation of a Folk Dancing Club. Difficulty was at first experienced in finding suitable accommodation, there being no sufficiently large room available except on Wednesday afternoon, which was not suitable. This difficulty was overcome by the members renting Oxford Hall one afternoon each week, and for two years the club flourished. The high rent, however, was a serious obstacle and with the departure of the organiser it was agreed to disband the club until better facilities could be assured.

Last year a request was received by the Women's Inter-Varsity Athletic Board for the inclusion of Sculling in Inter-Varsity Sports, but as at present only two universities desire it, no action has been taken.

Results of Last Year

A high peak of achievement was reached in 1932 when five Christie Cups were brought home and one National Championship.

Last year the Hockey and Lacrosse Clubs won the Cup in the Northern Universities' Championship, and the Fencing Club still holds the Cup from the previous year.

One of the smaller clubs which has made creditable progress within the last few years is the Athletic Club. It has hardly yet attained an identity of its own and is still dependent on the athletes

of other clubs, for only infrequently does it happen that a student comes up from school with a record of athletic achievement. Nevertheless the general standard has steadily risen and though the club's entrants have never been more than runners-up in the Inter-Varsity Competition, it has year by year produced competitors of distinct merit and commendable style—whose ease of performance has been particularly noticeable.

Some indication of the improvement in women's athletics may be gained from the fact that within the last four years records have been made in the Inter-Varsity Sports in eight different events. Nor has this progress been achieved at the expense of the individual, for there is conspicuous absence of strain and fatigue amongst the best athletes.

The Swimming Club lost its strongest members last year and is busy training a young and inexperienced team. One of the special difficulties of the club is its dependence on the regulations of the municipal baths, necessitating late practice-hours and evening matches. The same arrangement often obtains in other universities, and Inter-Varsity matches therefore make extravagant demands on students' time, discouraging them from joining the club.

The heavy claim on time is also found to be responsible for the withdrawal of students from team games, bi-weekly matches and the expense involved proving a real deterrent.

Clubs try to arrange weekly games for those not in the teams but accommodation for matches is insufficient to guarantee regularity of play.

Most clubs have suffered from reduced membership. The number of women entering the University shows this year a tendency to decline, and there are 87 fewer on the register.

The Women's Inter-Varsity Board

All University championship matches are now controlled by the Women's Inter-Varsity Board. The Board was founded in 1923, at the suggestion of Leeds University, and there are now sixteen affiliated universities and university colleges and five universities of associate membership who are entitled to send competitors to Inter-Varsity Trials. These are Cambridge, Dublin, Edinburgh, Glasgow and St. Andrews.

In 1933, the Board was approached on the subject of women taking part for the first time in the C.I.E. games at Turin. This invitation was accepted and competitors were selected from the results of the I.V. Trials. In all, twenty-five were sent, each

university being responsible for its own representatives. Two Manchester athletes were chosen, Miss Halsall for High Jump and Miss Killey for Swimming. To Manchester also fell the honour of providing the team manager: Miss Eileen Hughes, a medical student, herself a distinguished athlete, was invited to take charge of all arrangements for the journey and the sports in co-operation with the N.U.S.

The experience abroad was greatly enjoyed by all the members, and the experiment was considered to be well justified for the value of the contacts and as an incentive to the encouragement of a higher standard in university games.

It was felt, however, that better organisation was essential if a representative team was to be sent to the next International Games. Instead of the universities having to find money for the expenses of their own representatives, it was agreed to collect a central fund, and to appoint a Joint Committee consisting of representatives of the N.U.S., the U.A.U. and the W.I.V.A.B. to raise this fund and administer it. The number of competitors to be sent would depend on the quality of performance compared with international standards, and on the sum collected. The amount eventually distributed to the women provided the expenses of ten competitors, and five swimmers and five athletes were selected. A tennis player, already in Germany, joined the team in Budapest. Miss K. M. Halsall was again selected for High Jump and was invited to act as team manager for the team because of her previous experience in Turin and her knowledge of affairs as secretary to the W.I.V.A.B.

The results in athletics showed a considerably higher standard than in the previous games, and particularly noticeable were the performances of the highly-trained German team, and their delightful poise.

In the circumstances, the British team did well to have all its members placed in the finals. Great Britain took second place in swimming with 32 points, compared with Germany's 38.

In athletics, Germany again led with 61 points and Great Britain was third with 28 points. In the swimming, four nations were represented, in athletics seven nations took part.

The heavy demands made upon the Women's I.V.A. Board by increased membership, additional championships and international competitions have necessitated the appointment of a permanent secretary. This post was offered to Miss K. M. Halsall, who had previously served as honorary secretary.

Inter-Hall Athletics

A competition of some complexity is in existence between the six Halls of Residence for a Cup generously presented by Mr. Harold L. Behrens.

Five sports are included, hockey, netball, tennis, athletic sports and swimming, and the Cup is won by the hall standing best on the total result.

In the three team games, the contest is arranged in the form of an American tournament and the halls are graded according to the points won in these matches. In the swimming and athletic sports, two systems of scoring are in force. The first is the grade system. Standards of achievement have been determined, and three grades instituted in each event. A fourth grade was recently added in two of the swimming events to encourage beginners.

Trial days are held throughout the season and points awarded on performance. No limit is set to the number of times a student may present herself for trials ; the possibility of improvement is therefore open to her and a further contribution to the record of the hall.

The points collected by individuals are proportioned in relation to the number of students in residence.

In addition to this grade system an annual Competition Day is held in each sport and halls placed in order of merit on the results of these competitive events.

To find the final placing, these positions are balanced with the positions obtained from the grade-results.

The grade-system was introduced to encourage more general participation in swimming and athletics than is likely under straight knock-out regulations. Students of only average ability can contribute something to their hall's record and, by practice, perhaps raise their standard and pass a higher test. A hall not fortunate in possessing first-class athletes is badly handicapped otherwise.

The Cup last year was won by St. Gabriel's Hall.

College Athletics

This development of the Inter-Hall athletics has led to a change in the organisation of the College Athletic Club. Previously College Sports were held in May, and on the results, the Inter-Varsity team was selected. It has become increasingly difficult to count on support for athletics before the June Examinations. In place, therefore, of the College Sports there is now, at Manchester's suggestion, an Inter-Varsity Triangular Contest between Leeds, Liverpool and Manchester, held at each University in turn. Manchester gained second place last year.

Further Developments

More than ten years ago the W.A.U. received a request from Liverpool for a gymnastic contest between the two universities. It was declined because of the expense it would involve, the gymnasium at that time being only available for those who paid the fee of 10s. 6d.

Such a competition would have been difficult to judge, the type of gymnastics being so varied. Since then, there has been considerable widening of view, and the term Physical Education, substituted to denote the inclusion of different branches of training, gymnastics, games, dancing, swimming and athletic sports. For some time training on these lines has been included for women in the University Training Department, and on similar lines is now available for men.

Last year the Federation of University Women visited the gymnasium to see a class in physical training, including gymnastics, games and dancing. They were surprised at the variety and character of the work and expressed their warm appreciation.

There has been a marked development in the facilities provided. Independence and freedom in this recreative work require unencumbered floor space, and apparatus for gymnastics is of greater convenience if it can be easily brought out and as quickly removed.

The University Council has recently replaced the old-fashioned heavy boom by the modern type of counter-balanced beams, a most welcome change, which permits, even in the short weekly class, the inclusion of apparatus and more advanced work.

Improvements in the gymnasium still continue. Extensive structural alterations have transformed the unpromising-looking armoury into a convenient and attractive changing room.

W. S. C.

THE HALLS OF RESIDENCE

Dalton Hall

THE range of Hall activities does not vary a great deal from year to year but the incidence of interest changes quite markedly. A year or two ago End Room meetings were languishing and in one session were even omitted altogether. Last session they revived with increased vigour and this session they have commanded even greater enthusiasm, and in the second term are being held on almost every Sunday evening. By request, the Principal opened the series with an account of his war-time experiences. Others held or in prospect include talks on Mountaineering, the Roman occupation of Chester, the "International Voluntary Service for Peace," and an account of the escape from Spain last summer of an "International Tramping Tours" party led by a recent Old Daltonian.

The usual struggle was experienced to find 25 men in the Hall who wanted a dance; the usual pressgang activity by the committee achieved the usual success and the function appears to have been thoroughly enjoyed.

It is impossible for enthusiasm to be equally spread, and athletic activities generally are unfortunately passing through a period of low water. But the University Mountaineering Club has a number of adherents, and a new keenness has sprung up for Settlement work at Ancoats.

Hulme Hall

The curious law according to which a revival in industry is followed by a decline in University numbers affected Hulme Hall to a more than ordinary degree. Instead of the normal leavings and entries of forty men there were sixty men who went down while only twenty-seven accessions occurred. Industrial posts were secured after a first degree and hardly anyone remained in residence to engage in research. Despite the fall in numbers, Hulme once again asserted its supremacy in football. The annual dance was transferred from the Lent to the October term, leaving the dramatic entertainment alone for the Lent term. The Nine Lessons Festival Service was again held in December and the annual dinner on the last Saturday of term.

St. Anselm Hall

A three-act play entitled "Who Goes Next?" was presented in February, the producer being the Sub-Warden. The undergraduate

societies were again prominent in the life of the Hall, and among senior visitors we were especially glad to welcome the Vice-Chancellor of the University and the Bishop of Manchester, who came respectively as guests of honour to the Hall Commemoration Dinner and to the fourth annual old members' dinner.

St. Anselm Hall again found the superior numbers of the other Halls something of a handicap in the competition for the Armytage Cup, and finished third. Some spirited contests were seen, and the Hall gained second place at Rugby football, cricket, and athletics. Apart from the Inter-Hall competition, the various teams carried through successful programmes, a feature of which was the increased number of fixtures with schools. L. Bradbury had the distinction of playing for England against Ireland in the Amateur International Association Football Match, and H. O. Walker has been elected Captain of the University Athletic Club.

The chapel continues to play a valuable though unobtrusive part in the life of the Hall, and in March we once again had the privilege of a Confirmation being held within the Hall, when the Bishop of Manchester confirmed three of our members.

Lancashire Independent College

The Principal is fulfilling a large number of outside engagements as Chairman of the Congregational Union of England and Wales, but is able to work them in without any distraction of his work at the College.

Apart from the 35 "Theologs" there are eleven "hostel" men, so that the college is very full. The dramatic society presented "Three Wise Fools" at the end of February. We shall be glad to see all old men at the reunion, June 22nd-24th.

Unitarian College

The announcement (January, 1937) of a bequest of £1,500 by the late Mr. Edgar Wood adds to the endowment of the college a sum nearly double that received by bequests last year.

The appointment of the Principal as President of the General Assembly, 1936-37, and as Essex Hall lecturer, 1936, is without precedent in the history of the College, though two ex-principals were Essex Hall lecturers in 1913 and 1929 respectively.

One of the present students is serving this session as president of the Manchester Theological Colleges Union, which includes all the theological colleges in the University Faculty, and holds its meetings in the several constituent colleges.

A freshman this session, son of an old student of Owens College of nearly sixty years ago who is still in practice as a solicitor, came from Repton School and is articled with his brother, who entered here in 1920 from the same school and graduated LL.B. in 1923. It is an example of continuity of tradition in school, hall, university and profession.

Ashburne Hall

Shortly after the beginning of the session, Miss Ada Conway, who had been Steward for twelve years, resigned for family reasons, thus breaking her long and valued connection with the Hall. She has been succeeded by Mrs. Keith Murray.

The Annual Dance and Guest Night, both held in November, were the two most important functions of the term. Rehearsals for the dramatic society's production of "The Two Mrs. Carrolls" are now in progress.

The senior student is Miss Gretel Bergheimer. The president of the University Women's Union, Miss J. Halstead, came into residence at the beginning of the session.

The death of Mrs. Hope Hogg in October was a great grief and a great loss to all who knew her, and especially to all connected with Ashburne Hall. Her outstanding, warmly human personality, and the width and depth of her interests enriched every life with which she came in contact. Our sincere sympathy is extended to her daughter, Miss Winifred Hogg, in her great loss.

Langdale Hall

Last session's successful production of "Children in Uniform" was followed in November by that of "Countess Cathleen," given in the theatre of the Central Reference Library—a much appreciated innovation. Our Langdale producer, Miss Peggy Mason, is producing the Stage Society play this term.

Social activities include a garden party last June given by the Council and Warden, which coincided with the one really hot, fine day of the term, and the entertainment last term of 240 schoolgirls of Lancashire and Cheshire—an effort at organisation in a small space only made possible by the splendid co-operation of all members of the Hall. The new isolation wing has at length been used, and has proved its value in the prevention of the spread of infection.

Ellis Llwyd Jones Hall

An increased annual grant for books, and presents from members

of the Delegacy, including Professor Webster and Mrs. Fleure, have now built up a library of real value to students of all Faculties. A rug (given by Miss Fiddes) and new folk-weave curtains give a bright welcome to "bookworms."

In 1935 one of the basement rooms looking on to the garden was fitted up as a music room. A fine new piano having been presented to the common room by Professor Fiddes, the one previously there was placed downstairs. Through the generosity of the Misses Jones a magnificent Marconi radiogram has been installed in the common room. Last year the University decided that "Ellis" should have a scholarship of its own, and also be enabled to grant a few bursaries. The holders of these are now in residence and are confidently expected to bring credit to the Hall.

The "Old Elysians" Association holds a week-end re-union at the Hall in the Vacation, and publishes an annual news-sheet containing a report of the Re-union, notes on current University news, events in Hall and items of interest connected with old students, and in addition the addresses of all its 72 (to date) members.

St. Gabriel's Hall

The social life of the Hall is varied and interesting, and there are the weekly guest-nights at which visitors from other halls and members of the University staff are entertained. The annual Hall play, dance, tennis parties and other functions are maintained with much success.

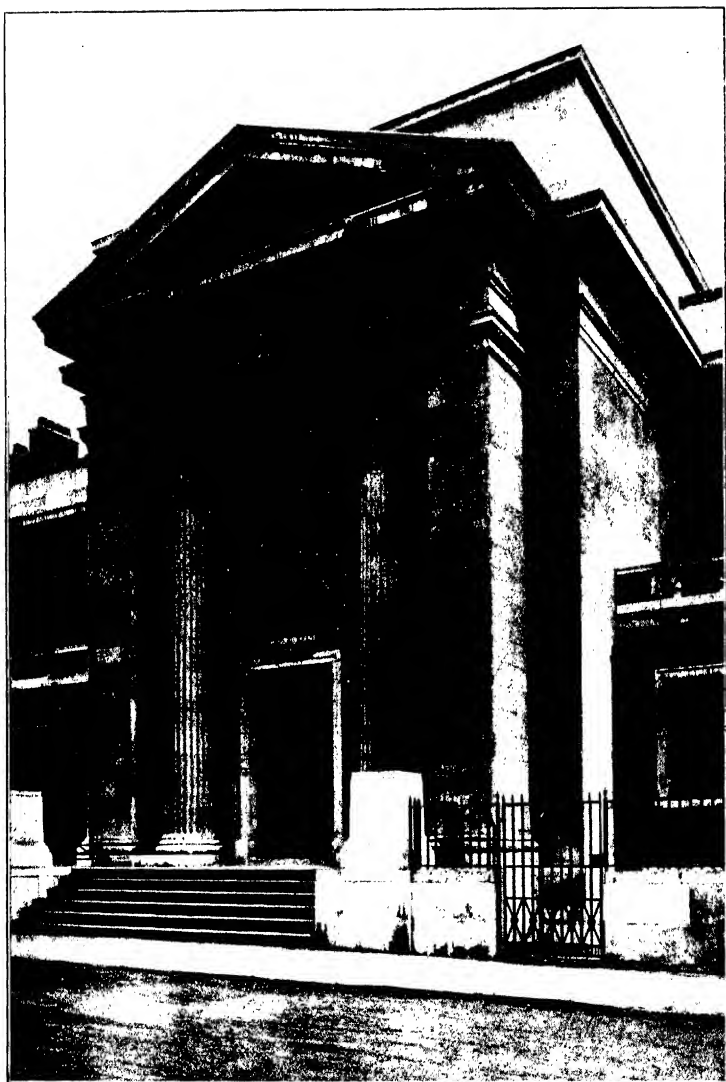
An association of former students was inaugurated in June, 1930, and continues to be much appreciated.

Lister House

Continuity of activity is not easily attained as the majority of students are in residence for only three months. A number of students continue in residence in a purely voluntary capacity but they are too few to form a nucleus for organised activities.

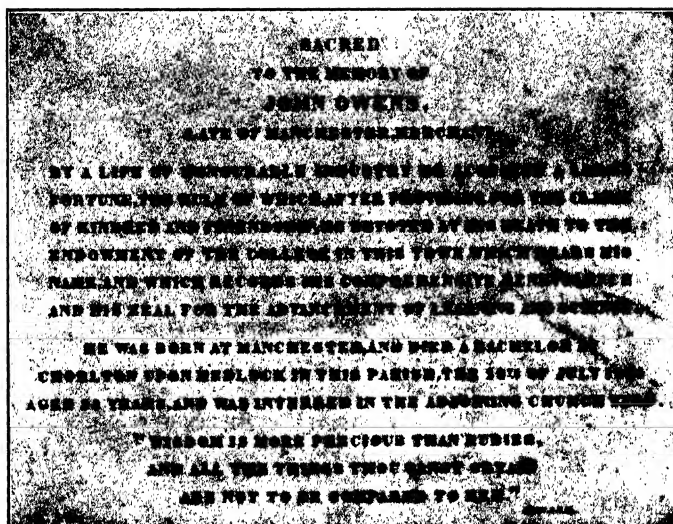
A hockey match between Lister House students and Infirmary residents was arranged in December, 1936, the result being a draw—3 all.

The Editor of the Journal would be glad to receive from graduates and friends of the University any suggestions regarding future numbers of the Journal. Letters should be addressed to the Editor, at the University, Manchester 13.



(Stewart Bale)

ARTS BUILDING ENTRANCE



(Stewart Bale)

THIS TABLET, ORIGINALLY ERECTED IN ST. JOHN'S CHURCH, DEANS GATE, MANCHESTER, WAS PRESENTED TO THE UNIVERSITY ON THE DEMOLITION OF THE CHURCH IN 1928, AND RE-ERECTED IN THE MAIN BUILDING OF THE UNIVERSITY IN 1930

